

### 3.24 Cumulative Effects

#### 3.24.1 Introduction

##### 3.24.1.1 Analysis Approach

CEQA requires a discussion of a project's cumulative impacts on the physical environment (CEQA Guidelines Section 15130). Cumulative impacts are defined as follows:

*“Cumulative impacts” refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.*

*(a) The individual effects may be changes resulting from a single project or a number of separate projects.*

*(b) The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.”*

(CEQA Guidelines Section 15355).

Determinations of cumulatively considerable effects is required by CEQA Section 15065[a][3] *Mandatory Findings of Significance*, and CEQA Section 15130 guides the discussion of cumulative impacts. Three questions are useful to make determinations:

1. Does the Proposed Project make an adverse contribution to the impact in question?
2. Is the combined impact of the Proposed Project and other projects significant and adverse?
3. Is the Proposed Project's incremental effect cumulatively considerable?

CEQA states that when a project's contribution is not cumulatively considerable, then the EIR need only briefly describe supporting reasoning for this conclusion (CEQA Guidelines Section 15130[a][2]).

To perform the cumulative impact analysis, CEQA recommends relying on one of two approaches (CEQA Guidelines Section 15130[b]):

- List Approach: a list of past, present, and probable future projects producing related or cumulative impacts, or
- Projection Approach: a summary of projections contained in an adopted general plan or planning document, or in a prior environmental planning document, which has been adopted or certified, that describes or evaluates regional or area-wide conditions contributing to the cumulative impacts.

In this analysis, a list approach is used (Table 3.24-1) to analyze potential cumulative effects for each resource area, considering specific impacts of the Proposed Project in combination with potential impacts of other projects. When utilizing a list, the following factors should be considered: (1) the nature of each environmental resource being

examined, and (2) the location of the project and its type (CEQA Guidelines Section 15130[b][1][B][2]). The list for the Proposed Project cumulative effects analysis includes the following planned, approved, or reasonably foreseeable project types that would result in related or cumulative impacts when considered in combination with the Proposed Project: riverine restoration projects; terrestrial resource management, conservation and restoration projects; water flow and water quality resource management projects; wildfire; forest and wildfire management projects; cannabis cultivation projects; other agricultural and rural residential projects; mining and mining withdrawal projects; infrastructure and energy projects; other rezoning and development projects; and recreation projects. This cumulative impact analysis focuses on projects that are not already considered in the analysis of potential impacts on environmental resources due to actions and elements included in the Proposed Project (Section 2). Past environmental conditions, including significant projects implemented before NOP issuance, are captured by the assessment of existing conditions in the *Environmental Setting* section of each resource area analysis. We note that the existing conditions included consideration of the NMFS and USFWS 2013 Joint Biological Opinion (2013 BiOp) flow requirements for the USBR Klamath Irrigation Project (NMFS and USFWS 2013), but the cumulative effects analysis considers the additional winter-spring surface flushing flows and deep flushing flows, as well as emergency dilution flows, that became a requirement in 2017 (U.S. District Court 2017). Additionally, measures PacifiCorp has committed to undertake as part of the KHSA upon certain triggers related to implementation of the Proposed Project are considered in this cumulative effects' analysis.

While wildfire is a natural occurrence, and an 'emergency' (CEQA Section 15359) rather than a foreseeable 'project' (CEQA Section 21065) under CEQA, with climate change more frequent and intense wildfires are reasonably foreseeable in California (Bedsworth et al. 2018). The area of the Proposed Project in Siskiyou County has been classified as having either high or very high wildfire hazard potential (CALFIRE 2007). Wildfires have the potential to result in relevant impacts (e.g., erosion and sediment deposition in streams) when combined with the Proposed Project, therefore this cumulative effects analysis considers increased frequencies and intensities of wildfires along with the list of 'projects' that could result in cumulative impacts (Table 3.24-1).

Significance criteria for cumulative effects vary by resource considered, and they are identical to those used to determine significance for Proposed Project impacts in each resource area. Classifications of significance differ from those used in resource areas, because of the mandatory requirement to assess cumulatively considerable effects (CEQA Section 15065[a][3]). The cumulative effects analysis concludes with a significance determination as follows (note that clarifying information is provided in non-bold font):

- **Beneficial cumulative effects** – when effects are cumulatively beneficial.
- **No significant cumulative impact** – when the combined impact of the Proposed Project and other projects would not be significant and adverse (and would also not be beneficial with sufficient certainty to describe it as such).
- **Not cumulatively considerable** – when the combined impact of the Proposed Project and other projects would be significant and adverse, but the incremental contribution of the Proposed Project would not be cumulatively considerable.
- **Not cumulatively considerable with mitigation** – when the combined impact of the Proposed Project and other projects would be significant and adverse, and the

incremental contribution of the Proposed Project requires mitigation to reduce it to less than cumulatively considerable.

- **Cumulatively considerable** – when the combined impact of the Proposed Project and other projects would be significant and adverse, and the incremental contribution of the Proposed Project is cumulatively considerable (and there is no feasible mitigation).

Table 3.24-1. List of Planned, Approved, or Reasonably Foreseeable Projects (Plus Wildfires) that Would Potentially Result in Related or Cumulative Effects When Combined with the Proposed Project (prepared September 2018).

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
<b>Riverine Restoration Projects</b>					
USDA Forest Service— Klamath National Forest (Federal Lands)	Snackenburg Creek Project— restoration of channel connectivity and reduction of sedimentation into the stream where Snackenburg Creek crosses Forest Road over an area of 1,508 acres; Water Board Waiver Category B	Gooseneck Ranger District, Klamath National Forest; 20 miles northwest of Macdoel, CA; Deer Creek, Klamath	In planning phase, 2018; implementation expected in 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
USDA Forest Service— Klamath National Forest (Federal Lands)	Elk Creek Watershed Project— integrated resource management project that aims to improve physical and biological conditions in the Elk Creek watershed, including road management, over 45,922 acres; Water Board Waiver Category B	Happy Camp Ranger District, Klamath National Forest	In planning phase, 2018; implementation expected in 2020	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
USDA Forest Service— Klamath National Forest (Federal Lands)	Kelly Bar Habitat Enhancement Project—enhance off-channel riparian habitat including improving connectivity and enhancing side channels, creating alcoves on Kelly Bar and West Bar, and enhancing two off-channel ponds on Kelly Bar over an area of 12 acres	Salmon River Ranger District, Klamath National Forest; Kelly Gulch is located on the North Fork Salmon River 14 miles upstream from its confluence with the South Fork of the Salmon River, and approximately 28.5 miles from the mouth of the Salmon River	In planning phase, 2018; implementation expected 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
National Fish and Wildlife Foundation	Klamath Basin Restoration Program—current applicants include Combined PacifiCorp, Klamath River Coho Enhancement Fund and USBR, Klamath River Coho Habitat Restoration Program	Klamath Basin	Grants advertised in 2018, soon to be announced	NFWF 2018	<a href="https://www.nfwf.org/klamathbasin/Pages/2018rfp.aspx">https://www.nfwf.org/klamathbasin/Pages/2018rfp.aspx</a>
PacifiCorp	Coho Enhancement Fund: PacifiCorp has agreed to make annual payments of \$510,000 into the Coho Enhancement Fund for each year that the permit (authorizing the potential incidental take of SONCC coho salmon) is in effect even though PacifiCorp has already made payments of \$510,000 per year into the Coho Enhancement Fund for 2009, 2010, 2011 and 2012	Klamath Basin	2009-2020	PacifiCorp 2012 (pp. 141–142)	<a href="http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Hydro/Hydro_Licensing/Klamath_River/KR_Coho_HCP_Feb162012Final.pdf">http://www.pacificorp.com/content/dam/pacificorp/doc/Energy_Sources/Hydro/Hydro_Licensing/Klamath_River/KR_Coho_HCP_Feb162012Final.pdf</a>
USBR	Klamath River Coho Restoration Grant Program (approximately \$500,000 annually)  See projects funded under this program in rows below.	Klamath Basin	2013-2023	USFWS and NMFS 2013 (pp. 278–279)	<a href="https://www.fws.gov/klamathfallsfwo/news/2013%20BO/2013-Final-Klamath-Project-BO.pdf">https://www.fws.gov/klamathfallsfwo/news/2013%20BO/2013-Final-Klamath-Project-BO.pdf</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
USBR and Mid-Klamath River Instream Working Group	Projects funded under the Klamath River Coho Restoration Grant Program in 2018: Increasing Year-Round Rearing Capacity & Habitat Quality for Natal & Non-Natal Populations of Coho Salmon in a Priority Lower Klamath Tributary – McGarvey Beaver Dam Analogue Project; and Lower Beaver Creek Off-Channel Habitat Restoration Planning	McGarvey Beaver Dam, and Lower Beaver Creek	In planning phase, 2018	USBR 2018a	<a href="https://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=62330">https://www.usbr.gov/newsroom/newsrelease/detail.cfm?RecordID=62330</a>
USBR and NMFS	Klamath River Coho Habitat Restoration Grant Program 2017 Grant Slate: (1) Lower Mill Creek Habitat Enhancement for Coho Salmon; (2) Lower Scott Valley Stream Habitat Restoration; (3) Horse Creek Supplemental Design Project; (4) Floodplain Habitat Restoration and Monitoring to Restore Salmon in the Klamath Basin	Klamath Basin	Funded in 2017	NFWF 2017	<a href="https://www.nfwf.org/klamathbasin/klamathcoho/Documents/2017grantslate.pdf">https://www.nfwf.org/klamathbasin/klamathcoho/Documents/2017grantslate.pdf</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
USBR and NMFS	Klamath River Coho Habitat Restoration Grant Program 2016 Grant Slate—projects include: (1) Middle Klamath Coho Refuge Habitat Enhancement – Planning and Design Team Support; (2) Horse Creek Wood Loading; (3) Increasing Year-Round Rearing Capacity and Habitat Quality for Natal and Non-Natal Populations of Coho Salmon in a Priority Lower Klamath Tributary; (4) Parks Creek Fish Passage Implementation Project; (5) Development of Cold Water Habitat for Coho Salmon; (6) Bogus Creek Fish Passage for Coho Salmon; (7) Cold Creek Coho Passage and Screening Project; (8) Lower French Creek Off-Channel Habitat Development; (9) Klamath National Forest Coho Habitat Enhancement in Horse Creek, China Creek and Little Horse Creek; (10) Parks Creek Fish Passage Design and Planning: Cardoza Ranch; (11) Lower Yreka Creek Restoration Project; (12) Lower Beaver Creek Coho Salmon Off-Channel Habitat Restoration	Klamath Basin	Funded in 2016	NFWF 2016	<a href="https://www.nfwf.org/klamathbasin/klamathcoho/Documents/klamathcoho_2016grant_slate.pdf">https://www.nfwf.org/klamathbasin/klamathcoho/Documents/klamathcoho_2016grant_slate.pdf</a>
Mid Klamath Watershed Council	Coho Habitat Enhancement and Monitoring Project—project will construct 1 and monitor 14 coho off-channel sites	Klamath River between Horse Creek and Camp Creek	Funded in 2015	NFWF 2016	<a href="https://www.nfwf.org/klamathriver/Documents/krcef_2015_totalprojects.pdf">https://www.nfwf.org/klamathriver/Documents/krcef_2015_totalprojects.pdf</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
Mid Klamath Watershed Council	Mid Klamath Tributary Fish Passage Improvement Project—create fish passage at the mouths and in the lower reaches of 72 Mid Klamath sub-basin tributaries in California to allow for adult and juvenile anadromous fish passage into upstream channels and off-channel rearing habitat	Mid Klamath Subbasin (Mid-Klamath, Salmon, and Lower Scott Rivers) in northern CA	Funded in 2011, 2012, and renewed funding in 2014 and 2015	NFWF 2016	<a href="https://www.nfwf.org/klamathriver/Documents/krcef_2015_totalp rojects.pdf">https://www.nfwf.org/klamathriver/Documents/krcef_2015_totalp rojects.pdf</a>
Mid Klamath Watershed Council	Mid Klamath Coho Rearing Habitat Enhancement Project—enhance cover complexity through placement of small woody debris and willow plantings within pools of the lower reaches of Klamath River tributaries; project will provide summer refugia that will increase coho survival rates from predation, resulting in increased coho populations	Siskiyou and Humboldt Counties, CA	Funded in 2010, 2011, 2012, and renewed funding in 2015	NFWF 2016	<a href="https://www.nfwf.org/klamathriver/Documents/krcef_2015_totalp rojects.pdf">https://www.nfwf.org/klamathriver/Documents/krcef_2015_totalp rojects.pdf</a>
Humboldt, Del Norte, Trinity, Siskiyou and Mendocino Counties	Five Counties Salmonid Conservation Program (5C Program)—includes managing sediment discharge from roads	Humboldt, Del Norte, Trinity, Siskiyou and Mendocino Counties, CA	1998–Present	Five Counties Salmonid Conservation Program 2018	<a href="http://www.5counties.org/roadmanual.htm">http://www.5counties.org/roadmanual.htm</a>



Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
Trinity County Resource Conservation District (TCRCD)	West Weaver Creek Salmonid Habitat Rehabilitation Project—rehabilitation of a 490-linear-foot section of creek impacted by past mining practices and wildfires, including restoration of the channel and floodplain connectivity, and improvement of salmonid habitat and natural creek function over a project area of 2.39 acres	West Weaver Creek, partly within Weaverville Community Forest, just West of Weaverville	Construction completed in 2017, revegetation completed in 2018	TCRCD 2018a	<a href="http://www.tcrd.net/index.php/2014-02-05-08-30-03/west-weaver-creek-salmonid-habitat-rehabilitation-project">http://www.tcrd.net/index.php/2014-02-05-08-30-03/west-weaver-creek-salmonid-habitat-rehabilitation-project</a>
California Department of Transportation, District 2—Northeastern California	Fort Goff Creek Fish Passage Improvement—prevent entrainment of fish into an existing water diversion ditch where they could be injured or killed over a two-acre project area; conserve water for the benefit of salmon and steelhead trout in Fort Goff Creek and the Klamath River	Fort Goff Creek, Siskiyou County, CA; water diversion/fish exclusion structure will be constructed at same site as current water diversion which is at RM 0.6 on Fort Goff Creek	Funded in 2012; on hold 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
Karuk Tribe, Fisheries Department	Lower Seiad Creek Channel Restoration—restoration of 4,000 lineal feet of stream; also known as part of the Klamath River Riparian Habitat Restoration—part of the Klamath River Coho Enhancement Fund (2010-0500-015)	Seiad Creek intersection with the Klamath River, CA	2015–2018	NFWF 2016	<a href="https://www.nfwf.org/klamathriver/Documents/krcef_2015_totalp rojects.pdf">https://www.nfwf.org/klamathriver/Documents/krcef_2015_totalp rojects.pdf</a>
Yurok Tribe	Restoring Off-Estuary Habitat in Hoppaw Creek, Klamath River—rearing habitat for natal and non-natal juvenile Coho salmon in an off-estuary tributary of the Klamath River; restoration effectiveness will be assessed; part of the Klamath River Coho Enhancement Fund (2010-0500-020)	Hoppaw Creek is a 3rd order stream that enters the Klamath River 2.6 miles upstream of the Pacific Ocean, Del Norte County, CA	Funded in 2013; ongoing in 2016	NFWF 2016	<a href="https://www.nfwf.org/klamathriver/Documents/krcef_2015_totalp rojects.pdf">https://www.nfwf.org/klamathriver/Documents/krcef_2015_totalp rojects.pdf</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
Yurok Tribe	Lower Klamath Coho Rearing Habitat Case Studies—work with the Klamath Basin partners to 1) finalize the off-channel case study template, 2) develop Coho Rearing Habitat Case Studies for all of the Lower Klamath sites, 3) conduct physical and biological assessments of constructed off-channel features for a minimum of six sites, and 4) conduct outreach measures	Trewer Creek, CA	Funded in 2014	NFWF 2016	<a href="https://www.nfwf.org/klamathriver/Documents/krcef_2015_totalprojects.pdf">https://www.nfwf.org/klamathriver/Documents/krcef_2015_totalprojects.pdf</a>
PacifiCorp	Gravel Enhancement below Iron Gate Dam for Coho Salmon—gravel augmentation program is to be implemented in the Klamath River downstream of Iron Gate dam to improve coho spawning and rearing habitat	Iron Gate Dam	Funded in 2014; gravel placed in 2014, 2016, and 2017	NFWF 2016	<a href="https://www.nfwf.org/klamathriver/Documents/krcef_2015_totalprojects.pdf">https://www.nfwf.org/klamathriver/Documents/krcef_2015_totalprojects.pdf</a>
Trinity River Restoration Program (U.S. Department of the Interior Bureau of Reclamation as NEPA lead agency; North Coast Regional Water Quality Control Board as CEQA lead agency; USDA Forest Service: Shasta-Trinity National Forest and U.S. Department of Interior Bureau of Land Management as federal cooperating agencies; Hoopa Valley Tribe and Yurok Tribe as cooperating tribal agencies)	Trinity River Restoration Program (TRRP) Channel Rehabilitation and Sediment Management Program and Site-specific Remaining Activities— increase salmon and steelhead habitat over a 40-mile reach; construction of slow water refuge habitats, reconnection of the floodplain, placement of in-river geomorphic and habitat features, revegetation of riverine and upland areas	Mainstem Trinity River from Lewiston Dam to the North Fork Trinity River (see specific locations in rows below)	FONSI signed in 2009	USBR 2009	<a href="https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=3138">https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=3138</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
Trinity River Restoration Program (includes U.S. Bureau of Reclamation and U.S. Bureau of Land Management as federal co-leaders, and North Coast Regional Water Quality Control Board, Regional Water Board as state lead agency)	2015 Trinity River Restoration Program (TRRP) at Limekiln Gulch— increase salmon and steelhead downstream of Lewiston Dam	Limekiln Gulch (RM 99.7–100.6)	FONSI signed in 2015	USBR 2015	<a href="https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=20621">https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=20621</a>
Trinity River Restoration Program (includes U.S. Bureau of Reclamation and U.S. Bureau of Land Management as federal co-leaders, and North Coast Regional Water Quality Control Board, Regional Water Board as state lead agency)	2016 Trinity River Restoration Program (TRRP) at Bucktail Site	Bucktail (RM 105.45–107.0); begins upstream of Bucktail Bridge and extends upstream 1.5 miles	FONSI signed in 2016	USBR 2016	<a href="https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=23209">https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=23209</a>
Trinity River Restoration Program (includes U.S. Bureau of Reclamation and U.S. Bureau of Land Management as federal co-leaders, and North Coast Regional Water Quality Control Board, Regional Water Board as state lead agency)	2017 Trinity River Restoration Program (TRRP) at Deep Gulch and Sheridan Creek	Deep Gulch and Sheridan Creek (RM 81.6–82.9); southeast of Junction City	In planning phase, 2018	USBR 2017a	<a href="https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=27594">https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=27594</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
<b>Terrestrial Resource Management, Conservation and Restoration</b>					
USDA Forest Service—Rogue River-Siskiyou National Forest (All Units)	Forest Wide Sensitive Plant Habitat Enhancement and Huckleberry Restoration in the SIA and HCRD; Huckleberry restoration will take place in Jackson Creek and Headwaters of the Rogue River	Rogue River-Siskiyou National Forest (All Units)—includes part of Siskiyou County	In planning phase, 2018	USDA Forest Service 2018b	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110610-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110610-2018-04.pdf</a>
USDA Forest Service—Klamath National Forest (Federal Lands)	Siskiyou Mariposa Lily Enhancement on Gunsight Ridge—pest management to enhance mariposa lily habitat over 5,566 acres (8,380-acre project area); Water Board Waiver Category A, expected	Scott River Ranger District, Klamath National Forest; about 3 miles west and slightly north of Yreka, within the Humbug-Klamath River, Yreka Creek-Shasta River, and Moffett Creek 5th field watersheds	In planning phase, 2018; implementation expected 2019	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
USDA Forest Service—Deschutes National Forest (Federal Lands)	Addition of aminopyralid to the list of available herbicides in the Deschutes Forest Plan—invasive weed management and control	Deschutes National Forest, OR	In planning phase, 2018	USDA Forest Service 2017a	<a href="https://www.fs.usda.gov/nfs/11558/www/nepa/107783_FSPLT3_4106136.pdf">https://www.fs.usda.gov/nfs/11558/www/nepa/107783_FSPLT3_4106136.pdf</a>
California Wildlife Conservation Board	Climate Adaptation and Resiliency Program—created by AB109; program funds are to be used for climate adaptation and resiliency projects that will result in enduring benefits to wildlife, including: grants for the acquisition of perpetual conservation easements and long-term conservation agreements; natural and working lands adaptation and resiliency planning	CA	Applications closed August 2018	CAWCB 2018b	<a href="https://www.wcb.ca.gov/Programs/Climate-Adaptation">https://www.wcb.ca.gov/Programs/Climate-Adaptation</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
<b>Water Flow and Water Quality Resource Management Projects</b>					
U.S. Bureau of Reclamation, National Marine Fisheries Service (NMFS), and U.S. Fish and Wildlife Service	Re-consultation of the 2013 Joint Biological Opinion Flows (2013 BiOp Flows) for the Klamath Irrigation Project, including the 2017 court-ordered flushing and emergency dilution flows	Klamath River dams and downstream reaches	Court Order Feb 8, 2017	U.S. District Court 2017	<a href="https://www.govinfo.gov/content/pkg/USCOURLS-cand-3_16-cv-04294/pdf/USCOURTS-cand-3_16-cv-04294-7.pdf">https://www.govinfo.gov/content/pkg/USCOURLS-cand-3_16-cv-04294/pdf/USCOURTS-cand-3_16-cv-04294-7.pdf</a>
California Natural Resources Agency	The Water Quality, Supply, and Infrastructure Improvement Act of 2014 (Proposition 1) authorizes \$7.545 billion in general obligation bonds to fund ecosystems and watershed protection and restoration, water supply infrastructure projects, including surface and groundwater storage, and drinking water protection	CA wide	In progress since 2014	California Natural Resources Agency 2015	<a href="http://bondaccountability.resources.ca.gov/p1.aspx">http://bondaccountability.resources.ca.gov/p1.aspx</a>
California Wildlife Conservation Board	Proposition 1 Stream Flow Enhancement Program—Proposition 1 authorized the Legislature to appropriate \$200 million to the Wildlife Conservation Board (WCB) to administer the California Stream Flow Enhancement Program (Program). The Program awards grant funding on a competitive basis to projects representing the mission of the WCB, and address the three goals of the California Water Action Plan: reliability, restoration, and resilience	CA	Applications for the 2018 Proposal Solicitation Notice and Application closed September 2018; projects must be complete by 2023	CAWCB 2018a	<a href="https://www.wcb.ca.gov/Programs/Stream-Flow-Enhancement">https://www.wcb.ca.gov/Programs/Stream-Flow-Enhancement</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
U.S. Department of the Interior, Bureau of Reclamation, Northern California Area Office	Long Term Plan to Protect Adult Salmon in the Lower Klamath River—addresses potential effects of flow-related actions to reduce the likelihood and potential severity of an Ich ( <i>Ichthyophthirius multifiliis</i> ) epizootic event that could lead to fish die-off; Ich grows on gills and suffocate fish; includes flow augmentation, with minimum flow of 2,800 cfs downstream of Lewiston Dam	Lower Klamath River, downstream of Lewiston Dam	Record of Decision signed, 2017 (note 2012, 2013, 2015 and 2016 minimum flow releases were separate planning processes)	USBR 2017b (note that 2012, 2013, 2015, and 2016 minimum flow releases were separate planning and release processes)	<a href="https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=22021">https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=22021</a>
California Wildlife Conservation Board (California Stream Flow Enhancement Program FY 2016/17)	Hart Ranch Instream Flow Enhancement—proposal is to consider the allocation for an implementation grant to California Trout (CalTrout) for a cooperative project with United States Fish and Wildlife Service (USFWS), Natural Resources Conservation Service (NRCS), The Nature Conservancy (TNC), and UC Davis Center for Watershed Sciences to dedicate instream, through a California Water Code section 1707 transfer, 1.5 cfs of cold water to the Little Shasta River through a combination of on-farm efficiency savings and voluntary flow contributions, located on privately-owned land six miles east of Montague in Siskiyou County	Little Shasta River, six miles east of Montague, Siskiyou County	In planning phase, 2017	CalTrout 2017	<a href="https://caltrout.org/2017/03/caltrout-receives-grants-fish-passage-improvement-projects/">https://caltrout.org/2017/03/caltrout-receives-grants-fish-passage-improvement-projects/</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
California Department of Water Resources	Sustainable Groundwater Management Act (SGMA)—high and medium priority basins are required to halt overdraft and bring groundwater basins into balanced levels of pumping and recharge	CA	Signed in 2014, currently in progress	DWR 2018	<a href="https://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management">https://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management</a>
Siskiyou County	In Siskiyou County, Butte Valley, Shasta Valley, and Scott River Valley, as well as the Tulelake sub-basin, are designated as medium priority basins under SGMA	Butte Valley, Shasta Valley, Scott River Valley, and Tulelake sub-basin, Siskiyou County, CA	Signed in 2014, currently in progress	Siskiyou County 2015	<a href="https://www.co.siskiyou.ca.us/sites/default/files/public_docs/PLN-20151013_BOS-MEMO_ReSGMA-Update_v1002_WithAttachments.pdf">https://www.co.siskiyou.ca.us/sites/default/files/public_docs/PLN-20151013_BOS-MEMO_ReSGMA-Update_v1002_WithAttachments.pdf</a>
Scott River Water Trust	Emergency Stream Augmentation for the Scott River—to benefit salmon	French Creek, Miners Creek, and the mainstem Scott River	Funded in 2014	NFWF 2016	<a href="https://www.nfwf.org/klamathriver/Documents/krcef_2015_totalprojects.pdf">https://www.nfwf.org/klamathriver/Documents/krcef_2015_totalprojects.pdf</a>
Scott River Water Trust	Improving Streamflow for Coho Salmon in the Scott River	Scott River sub-basin, CA	Funded in 2010	NFWF 2016	<a href="https://www.nfwf.org/klamathriver/Documents/krcef_2015_totalprojects.pdf">https://www.nfwf.org/klamathriver/Documents/krcef_2015_totalprojects.pdf</a>
Montague Water Conservation District	MWCD-Shasta River Flow Enhancement Project	The southern portion of the Shasta River watershed, centered near Dwinnell Reservoir in Siskiyou County, CA	Funded in 2013	NFWF 2016	<a href="https://www.nfwf.org/klamathriver/Documents/krcef_2015_totalprojects.pdf">https://www.nfwf.org/klamathriver/Documents/krcef_2015_totalprojects.pdf</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
City of Yreka (partly funded by a Flood Hazard Reduction grant from the California Department of Water Resources)	City of Yreka 2016 Greenway Master Plan and Flood Hazard Reduction Project—includes: enhancing fish habitat, recreational opportunities, educational opportunities, improved law enforcement and public security, Coho recovery, flood hazard reduction, water quality improvement, stormwater management in small tributaries, trail system expansion and linkages, widening of Yreka Creek, excavations adjacent to Yreka Creek, overflow floodwater channels, removing soils from the floodway, expanding greenway corridors	Yreka Creek and other streams, Yreka, CA	In planning phase, 2016	City of Yreka 2016	<a href="https://ci.yreka.ca.us/sites/ci.yreka.ca.us/assets/files/_Yreka_2016_Greenway_Master_Plan_DEIR.pdf">https://ci.yreka.ca.us/sites/ci.yreka.ca.us/assets/files/_Yreka_2016_Greenway_Master_Plan_DEIR.pdf</a>
IM1 – Interim Measures Implementation Committee (IMIC)	The IMIC is comprised of representatives from PacifiCorp, other parties to the KHSA (as amended on November 30, 2016), and non-signatory representatives from the State Water Board and Regional Water Board (see KHSA Appendix B, Section 3.2). The purpose of the IMIC is to advise on implementation of the Non-Interim Conservation Plan Interim Measures set forth in Appendix D of the Amended KHSA.	CA and OR	Ongoing	KHSA 2016	<a href="https://www.doi.gov/sites/doi.gov/files/uploads/FINAL%20KHSA%20PDF.pdf">https://www.doi.gov/sites/doi.gov/files/uploads/FINAL%20KHSA%20PDF.pdf</a>
PacifiCorp	Klamath Hydroelectric Settlement Agreement (KHSA) Interim Measure (IM) 11 Water Quality Improvement Project—draft priority list of projects identifies diffuse source treatment wetlands; riparian restoration; large scale wetland restoration; agricultural	OR	Not yet occurred—to be funded after acceptance of FERC surrender order	KHSA 2016	<a href="https://www.doi.gov/sites/doi.gov/files/uploads/FINAL%20KHSA%20PDF.pdf">https://www.doi.gov/sites/doi.gov/files/uploads/FINAL%20KHSA%20PDF.pdf</a>



Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
	water conservation piping; PacifiCorp shall spend up to \$250,000 per year to be used for studies or pilot projects developed in consultation with the Implementation Committee to improve interim water quality in the Klamath River; \$5.4 Million one-time funding and \$560,000 annually in maintenance for long-term nutrient reduction would occur				
PacifiCorp	KHSAs Interim Measure (IM) 16 Water Diversion Projects—elimination of three screened diversions from Shovel (2) and Negro (1) Creeks; modify water rights to move points of diversion to the mainstem of the Klamath	CA	Not yet occurred	KHSAs 2016	<a href="https://www.doi.gov/sites/doi.gov/files/uploads/FINAL%20KHSAs%20PDF.pdf">https://www.doi.gov/sites/doi.gov/files/uploads/FINAL%20KHSAs%20PDF.pdf</a>
North Coast Regional Water Quality Control Board	Various grants for water quality improvement projects through money received from the USEPA through Section 319(h) of the Clean Water Act and Timber Regulation and Forest Restoration Fund. Projects must be in nonpoint source pollution priority watersheds and priority is given to projects that address TMDL implementation and those that address problems in impaired waters.	CA	Ongoing	SWRCB 2018	<a href="https://www.waterboards.ca.gov/water_issues/programs/nps/319grants.html">https://www.waterboards.ca.gov/water_issues/programs/nps/319grants.html</a>
North Coast Regional Water Quality Control Board	Waste discharge requirements, waivers, and National Pollutant Discharge Elimination System (NPDES) permits issued and renewed with updated best management practices (BMPs) on a regular basis	CA	Ongoing	NCRWQCB 2018, pers. comm.	N/A

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
North Coast Regional Water Quality Control Board, Oregon Nature Conservancy, Klamath Tribes, Klamath Watershed Partnership, Trout Unlimited, Oregon Department of Environmental Quality, US Fish and Wildlife Service	Upper Klamath Basin Watershed Action Team implements various projects generally located in the Upper Klamath Lake, Wood River, Sprague River, Williamson River	OR and CA	Ongoing	NCRWQCB 2018, pers. comm.	N/A
U.S. Bureau of Reclamation, U.S. Fish and Wildlife Service, Klamath Water Users Association, irrigation districts, Oregon Department of Environmental Quality, North Coast Regional Water Quality Control Board	Watershed Stewardship Partnership works with landowners, agencies, and other partners to conserve, enhance, and restore natural resources of the Klamath Basin through education, consultation, and restoration. Various water quality improvement projects and practices are generally implemented in the Upper Klamath River, Lower Klamath Lake, Lost River, Klamath Irrigation Project	OR	Ongoing	KWP 2018	<a href="http://www.klamathpartnership.org/programs.html">http://www.klamathpartnership.org/programs.html</a>
<b>Wildfire</b>					
CALFIRE	2016 Fires in CA—Old, Moffett, Gap, Grade, Tully, Summit, Stafford, Table, Bailey, Pony, and Mill Fires; Acres burned: Del Norte (105 acres), Humboldt (768 acres), Siskiyou (844 acres), Trinity (4 acres)	CA	2016	CALFIRE 2016	<a href="http://cdfdata.fire.ca.gov/incidents/incidents_archived?archive_year=2016&amp;pc=20&amp;cp=1">http://cdfdata.fire.ca.gov/incidents/incidents_archived?archive_year=2016&amp;pc=20&amp;cp=1</a>
ODF	2016 Fires in OR—5,661-acre Withers Fire northeast of Klamath Falls	OR	2016	ODF 2016	<a href="https://www.OR.gov/ODF/Documents/Fire/2016_Protection_Division_Fire_Season_Report.pdf">https://www.OR.gov/ODF/Documents/Fire/2016_Protection_Division_Fire_Season_Report.pdf</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
CALFire	2017 Fires in CA—Miller Complex, Eclipse, Young, and Orleans Fires	CA	2017	CALFIRE 2017	<a href="http://cdfdata.fire.ca.gov/incidents/incidents_archived?archive_year=2017">http://cdfdata.fire.ca.gov/incidents/incidents_archived?archive_year=2017</a>
ODF	2017 Fires in OR—Crane Creek, Jade Creek, and Naylox in the vicinity of Klamath Falls; Acres burned in OR (717,212 acres), and on ODF lands (47,165 acres)	OR	2017	ODF 2017	<a href="https://www.OR.gov/ODF/Documents/Fire/2017_ODF_Protection_Fire_Season_Report.pdf">https://www.OR.gov/ODF/Documents/Fire/2017_ODF_Protection_Fire_Season_Report.pdf</a>
CALFire	2018 Fires in CA—Mill Creek 1, Natchez, Klamathon, Watson Creek, Iron Gate, Cherry, Steamboat, Lott, Johnson, Petersburg, Meamber, Martin, Grape, Ager, and Shastina Fires	CA	2018	CALFIRE 2018	<a href="http://www.fire.ca.gov/current_incidents">http://www.fire.ca.gov/current_incidents</a>
ODF	2018 Fires in OR—Watson Creek Fire in OR	OR	2018	ODF 2018	<a href="http://wildfireORdeptofforestry.blogspot.com/2018/08/watch-out-for-watson-creek-fire.html">http://wildfireORdeptofforestry.blogspot.com/2018/08/watch-out-for-watson-creek-fire.html</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
<b>Forest and Wildfire Management Projects</b>					
USDA Forest Service — Klamath National Forest (Federal Lands)	Horse Creek Community Protection and Forest Restoration Project— reduce fuels, reduce safety hazards, and restore previously stocked units that were burned in the 2016 Gap Fire over 7325 acres and 103 lineal road miles	Happy Camp/Oak Knoll Ranger District of Klamath National Forest; this includes north, northwest, and northeast of the town of Horse Creek, CA up to the border of CA and OR and the Rogue-River Siskiyou National Forest	In late planning phase, 2017	USDA Forest Service 2017b	<a href="https://www.fs.usda.gov/project/?project=50586">https://www.fs.usda.gov/project/?project=50586</a>
USDA Forest Service — Klamath National Forest (Federal Lands)	Harlan—management for wildfire, including prescribed fire, strategic fuel breaks, and thinning; improve forest health and diversity, including resilience to insects and disease; maintain historic grassland and shrubland habitats; improve foraging habitat for elk and deer; protect cultural resources; and provide for safe public access to open roads; Water Board Waiver Category B	Goosenest Ranger District, Klamath National Forest; the project is located within the Horsethief Creek, Lough Lake, Lower Butte Creek, Prather Creek, and Upper Butte Creek 6th field watersheds; directly west and north of the community of Bray, CA, and approximately eight miles south of Macdoel in Siskiyou County	In planning phase, 2018; implementation expected in 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
USDA Forest Service — Klamath National Forest (Federal Lands)	Lucky Penny—thinning of 1,500 acres of pine plantation within about a 2,300 acre project area to promote stand health, reduce fuel, and accelerate development of late-successional characteristics; Water Board Waiver Category A.	Goosenest Ranger District, Klamath National Forest; 20 miles northwest of Macdoel, CA	In planning phase, 2018; implementation expected in 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
USDA Forest Service — Klamath National Forest (Federal Lands)	Pumice Vegetation Management Project—addresses deteriorating forest health conditions, increasing hazardous fuel conditions, and reduced ecological diversity, all caused by a century of fire exclusion and past management activities over an area of 9056 acres; Water Board Waiver Category B	Goosenest Ranger District, Klamath National Forest; Tamarack Flat (18010204130100) 7th field watershed; between Garner Mountain and Davis Rd (S. of four corners)	In planning phase, 2018; implementation expected in 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
USDA Forest Service—Klamath National Forest (Federal Lands)	Six Shooter Project—addresses the lack of young to mid-aged shrubs for big game, deteriorating forest health conditions, and increasing hazardous fuel conditions over an area of 15,067 acres; Water Board Waiver Category A, expected	Goosenest Ranger District, Klamath National Forest; the project is located within the Antelope Well, Dock Well, Hill 22, and Six Shooter Pass 7th field watershed	In planning phase, 2018; implementation expected in 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
USDA Forest Service—Klamath National Forest (Federal Lands)	Crawford Vegetation Management Project—thinning in stands for forest health and fuels reduction, with fuel treatments, including under-burning and pile burning on about 1,600 acres; Water Board Waiver Category B	Happy Camp Ranger District, Klamath National Forest	In progress; implementation expected in 2019	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
USDA Forest Service—Klamath National Forest (Federal Lands)	Hancock Forest Management Access Road—construct 2,300 feet of temporary and 300 feet of permanent roadbeds for log hauling for forest use and management purposes	Happy Camp Ranger District, Klamath National Forest; Mill Creek 7th Field Watershed	In planning phase, 2018; implementation expected in 2020	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
USDA Forest Service—Klamath National Forest (Federal Lands)	Oak Fire Roadside Hazard Tree Proposal—reduce threats to public safety along 31 miles of National Forest Transportation System roads within the Oak Fire perimeter; Water Board Waiver Category A, expected	Happy Camp Ranger District, Klamath National Forest	In planning phase, 2018; implementation expected in 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
USDA Forest Service—Klamath National Forest (Federal Lands)	Seiad-Horse Risk Reduction Project—reduce safety hazards along roads and in concentrated stands, reduce fuels adjacent to private property, reduce the risk of future large-scale high severity fire losses of late successional habitat, and place large woody debris in streams for fish and wildlife habitat restoration in response to the 2017 Abney Fire, over an area of 10,800 acres	Happy Camp / Oak Knoll Ranger District of Klamath National Forest, Seiad Creek-Klamath River and Horse Creek-Klamath River 5th field watersheds—five miles North to Northeast of Seiad Valley, CA, in Siskiyou County	In planning phase, 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
USDA Forest Service—Klamath National Forest (Federal Lands)	Callahan Complex Fuels Treatment on Private Land CE—fuel reduction on 200 acres of private land	Salmon River Ranger District, Klamath National Forest; private land in and around the community of Callahan, Siskiyou County	In planning phase, 2018; implementation expected in 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
USDA Forest Service—Klamath National Forest (Federal Lands)	Salmon August Reforestation Project—reforestation on 155 acres of lands burned during the 2017 Salmon-August Complex fire (1,093 acres); primarily restocking of conifer-dominated stands	Salmon River Ranger District, Klamath National Forest; located about five miles northwest of Sawyers Bar, CA, and within the Cherry Creek and Specimen Creek areas of the North Fork Salmon River Watershed	In planning phase, 2018; implementation expected 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
USDA Forest Service— Klamath National Forest (Federal Lands)	Salmon August Reforestation Project—Planting Unit 450-40 Only CE; to promote reforestation on lands burned during the 2017 Salmon-August Complex fire	Salmon River Ranger District, Klamath National Forest; located about 5 miles northwest of Sawyers Bar, CA, and within the Cherry Creek and Specimen Creek areas of the North Fork Salmon River Watershed	Completed in 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
USDA Forest Service— Klamath National Forest (Federal Lands)	Yellow Jacket Ridge—2,600 acres of precommercial thinning, release and fuels reduction in plantations and in natural stands	Salmon River Ranger District, Klamath National Forest	In planning phase, 2018; implementation expected 2019	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
USDA Forest Service— Klamath National Forest (Federal Lands)	Craggy Vegetation Management—improve fire resiliency by reducing fuels and stand density in strategic areas (11,000-acre treatment area) to protect communities and promote forest health	Scott River Ranger District, Klamath National Forest; near Yreka, CA	In planning phase, 2018; implementation expected 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
USDA Forest Service— Klamath National Forest (Federal Lands)	East Fork Scott—improve conditions within the E Fork Scott watershed; treatments may include meadows, riparian areas, fuels reduction, mine reclamation, stand density reduction, and wildlife habitat improvements over 31,540 acres	Scott River Ranger District, Klamath National Forest; 10 miles NE of Callahan, Siskiyou County	In planning phase, 2018; implementation expected 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
USDA Forest Service—Klamath National Forest (Federal Lands)	Upper North Fork Salmon Fuels Reduction—treatment of 120 acres with high priority fuels reduction and prescribed fire on private land	Salmon River Ranger District, Klamath National Forest; private properties in the upper North Fork Salmon River drainage from Little North Fork to Taylor Hole; North Fork Salmon River 5th Field Watershed	On hold, 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
USDA Forest Service—Klamath National Forest (Federal Lands)	Lover's Canyon—commercially thin about 863 acres, non-commercially thin about 1,103 acres, create fuel breaks on about 255 acres, and underburn about 2,223 acres over a total project area of 4,444 acres	Scott River Ranger District, Klamath National Forest; 15 miles west of Fort Jones, CA, within 7 drainages of the Lower Scott River Watershed	In planning phase, 2018; implementation expected 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
USDA Forest Service—Klamath National Forest (Federal Lands)	Steamboat Oak Habitat Improvement—fuels reduction and oak woodland habitat improvement and retention for improved defensible space adjacent to the CALFIRE Deadwood Camp, improved wildlife habitat, increased fire resiliency, and overall forest health over an area of 45.5 acres	Scott River Ranger District, Klamath National Forest; 5 miles north of Fort Jones, CA, Siskiyou County; located on the ridge between Soares and Steamboat Gulch adjacent to the CALFIRE Deadwood Camp in the McAdams Creek Drainage	In planning phase, 2018; expected implementation 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>



Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
USDA Forest Service— Klamath National Forest (Federal Lands)	Yreka WUI Hazardous Fuels Reduction on Private Land—fuel reduction over 250 acres, additional acreage in future stages	Scott River Ranger District, Klamath National Forest; West of the city of Yreka, in the Middle Fork Humbug Creek, Greenhorn Creek, Yreka City—Yreka Creek, Long Gulch, and Rocky Gulch—Yreka Creek 7th field watershed	In planning phase, 2018; implementation expected 2019	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
USDA Forest Service— Klamath National Forest (Federal Lands)	Somes Bar Integrated Fire Management—remove fuels prior to prescribed burning in plantations 40 years and older, and mature natural stands while enhancing cultural and ecological plant species; shaded fuel breaks are proposed, and temporary roads are considered on a case by case basis over a project area of 5,570 acres	Scott River Ranger District, Klamath National Forest	In planning phase, 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
TCRCD	California Fire Safe Council CWPP Implementation Phase I: OR Mountain area of Weaverville—mechanical chipping and thinning over 1.2 miles of roadside shaded break; 50 acres completed to date	OR Mountain area of Weaverville, including OR St and Dutch Ln	Work initiated in 2017	TCRCD 2018b	<a href="http://www.tcrd.net/index.php/2014-02-05-08-30-03/forest-health">http://www.tcrd.net/index.php/2014-02-05-08-30-03/forest-health</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
<b>Cannabis Cultivation Projects</b>					
City of Yreka	A City Council-initiated Ordinance entitled "Non-Medical Marijuana Cultivation Regulation and the Prohibition of Commercial Cannabis Activity, Manufacture, Testing, Dispensing, Sales, Distribution and Delivery within all Zoning Districts in the City of Yreka" (note that indoor cultivation is regulated, not prohibited)	City of Yreka limits	Adopted, 2017	Yreka Planning Commission 2017	<a href="http://ci.yreka.ca.us/sites/ci.yreka.ca.us/assets/files/P_C_Mintues_7_19_17.pdf">http://ci.yreka.ca.us/sites/ci.yreka.ca.us/assets/files/P_C_Mintues_7_19_17.pdf</a>
Humboldt Healing Collective; Aronsen Peter M Tr (owner)	Special Permit (SP) under Humboldt County Commercial Medical Marijuana Land Use Ordinance—existing outdoor cannabis cultivation; there are two points of water diversion and a rain catchment; includes 63,400-gallon water storage in hard tanks onsite on a 9,976-square-foot site	Willow Creek area, Humboldt County; North side of SH 299, 4.86 miles from the intersection of Titlow Road and SH 299	In planning phase, 2018	Humboldt County 2017a	<a href="https://humboldt.gov.org/DocumentCenter/View/5523/summary-chart-of-projects-opened-by-the-Current-Planning-Division-in-the-previous-month?bidId=">https://humboldt.gov.org/DocumentCenter/View/5523/summary-chart-of-projects-opened-by-the-Current-Planning-Division-in-the-previous-month?bidId=</a>
Oak Knob, LLC	Conditional Use Permit for existing outdoor and mixed light cannabis cultivation—includes relocation of cultivation away from streamside, a new well and drip irrigation system on a 43,560-square-foot site; projected water use is 250,000 gallons/year; water is from an existing spring diversion, with storage in tanks, bladders, and a rainwater catchment pond; processing will occur offsite	Willow Creek area, Humboldt County; West side of SH 299, 12.42 miles from the intersection of SH 299 and Friday Ridge	In planning phase, 2018	Humboldt County 2017a	<a href="https://humboldt.gov.org/DocumentCenter/View/5523/summary-chart-of-projects-opened-by-the-Current-Planning-Division-in-the-previous-month?bidId=">https://humboldt.gov.org/DocumentCenter/View/5523/summary-chart-of-projects-opened-by-the-Current-Planning-Division-in-the-previous-month?bidId=</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
SJH Timber, Inc	Cannabis nursery in Trinity Alps Business Park—construction of two 3,000-square-foot greenhouses, and a 3,600-square-foot commercial building for sales, research and development, and storage	Trinity Alps Business Park, 271 Industrial Park Way, Weaverville, Trinity County, CA; outside 100-year floodplain of Weaver Creek	In planning phase, 2018	Trinity County 2018	<a href="http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports">http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports</a>
Various applicants	Variance from required 350-foot cannabis cultivation setback—there are several applications for the same variance	Lewiston, Hayfork, and other locations in Trinity County	In planning phase, 2018	Trinity County 2018	<a href="http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports">http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports</a>
Sungold Flat, LLC	SP to relax the 600-foot setback requirement from Six Rivers National Forest—an associated Zoning Clearance is concurrently being processed for 10,000 square feet of new commercial medical cannabis cultivation, and 20,000 square feet of Retirement, Remediation, and Relocation (RRR) cultivation referred to as Lorie Harbor; 30,000-square-foot total area	1570 Patterson Road, Willow Creek, Humboldt County, CA	In planning phase, 2018	Humboldt County 2018a	<a href="https://humboldt.gov.org/AgendaCenter/ViewFile/Agenda/_05102018-1077">https://humboldt.gov.org/AgendaCenter/ViewFile/Agenda/_05102018-1077</a>
Patterson Flat, LLC	SP to relax the 600-foot setback requirement from Six Rivers National Forest—the proposed cannabis cultivation area totaling 50,000 square feet is being permitted under three separate applications	1570 Patterson Road, Willow Creek, Humboldt County, CA	In planning phase, 2018	Humboldt County 2018b	<a href="https://humboldt.gov.org/AgendaCenter/ViewFile/Agenda/_04192018-1069">https://humboldt.gov.org/AgendaCenter/ViewFile/Agenda/_04192018-1069</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
Sacred Earth Apothecary	SP for an existing commercial cannabis operation consisting of 7,000 square feet of outdoor cultivation and 2,111 square feet of mixed-light cultivation—5.1-acre parcel; water is supplied by the Willow Creek Community Services District, and estimated annual water usage is 65,000 gallons	1255 State Highway 96, Willow Creek area, Humboldt County, CA	In planning phase, 2018	Humboldt County 2018c	<a href="https://humboldt.gov.org/AgendaCenter/ViewFile/Agenda/_03222018-1055">https://humboldt.gov.org/AgendaCenter/ViewFile/Agenda/_03222018-1055</a>
Enchanted Earth, LLC Special Permit	SP to relax the 600-foot setback requirement from Six Rivers National Forest—an associated Zoning Clearance is concurrently being processed for 2,000 square feet of commercial medical cannabis cultivation	212 Enchanted Spring Lane, Willow Creek area, Humboldt County, CA	In planning phase, 2018	Humboldt County 2018d	<a href="https://humboldt.gov.org/AgendaCenter/ViewFile/Agenda/_01182018-1027">https://humboldt.gov.org/AgendaCenter/ViewFile/Agenda/_01182018-1027</a>
Green Star Ranch, Inc	SP for an existing 7000 sq-ft cannabis cultivation operation consisting of 2,000 square feet of mixed light and 5,000 square feet of outdoor with onsite relocation—water is provided by the Willow Creek Community Services District, and estimated annual water usage is 14,400 gallons; total onsite water storage is 300 gallons in a mixing-tank, and processing occurs onsite	2525 Patterson Road, Willow Creek, Humboldt County, CA	In planning phase, 2017	Humboldt County 2017b	<a href="https://humboldt.gov.org/AgendaCenter/ViewFile/Agenda/_12142017-1015">https://humboldt.gov.org/AgendaCenter/ViewFile/Agenda/_12142017-1015</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
Willow Creekside Farms	SP for an existing 10,000-square-foot medical cannabis cultivation operation—cultivation will consist of a 1,800-square-foot mixed-light greenhouse and an existing 8,200-square-foot outdoor cultivation area on a 10,000-square-foot site; total onsite storage capacity is 5,500 gallons in 4 storage tanks, and irrigation water is by the Willow Creek Community Services District	230 Creekside Lane, Willow Creek, Humboldt County, CA	In planning phase, 2017	Humboldt County 2017c	<a href="https://humboldtgov.org/AgendaCenter/ViewFile/Agenda/_09212017-975">https://humboldtgov.org/AgendaCenter/ViewFile/Agenda/_09212017-975</a>
<b>Other Agricultural and Rural Residential Projects</b>					
USDA Forest Service—Klamath National Forest (Federal Lands)	Bray and Horsethief Grazing Allotment Analysis—grazing management / reauthorization of grazing under the Rescissions Act of 1995, Water Board Waiver Category B	Goosenest Ranger District, Klamath National Forest, including: Bray, 13 miles SE of Macdoel, CA, and Horsethief, 10 miles SW of Macdoel, CA, 5th-field watersheds: Butte Creek, Antelope Creek-Red Rock, and Little Shasta River	In planning phase/public comment period, 2018; implementation expected in 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
USDA Forest Service—Klamath National Forest (Federal Lands)	Cattle Guard Installation on Forest Road 46N50—install cattle guard in Horse Creek Special Interest Area	Happy Camp Ranger District, Klamath National Forest; on the Horse Creek road (Forest Road 46N50) about 1/2 mile beyond the forest boundary	In planning phase, 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
USDA Forest Service—Klamath National Forest (Federal Lands)	Dry Lake and Horse Creek Grazing Allotment Management—grazing management plan over 78,566 acres; Water Board Waiver Category B, expected	Happy Camp Ranger District, Klamath National Forest; north of Highway 96 near the communities of Horse Creek and Oak Knoll in Siskiyou County	In planning phase, 2018-2019; implementation expected in 2020	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
USDA Forest Service—Klamath National Forest (Federal Lands)	Arland Costa Special Use Permit Renewal—renew permit for livestock area	Scott River Ranger District, Klamath National Forest	On hold, 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
USDA Forest Service—Klamath National Forest (Federal Lands)	Lake Mountain & Middle Tompkins Grazing Allotment Management Plan Project—reauthorization of grazing permits over 28,864 acres	Scott River Ranger District, Klamath National Forest; Oak Knoll and Scott River RD boundary near Lake Mtn and Tom Martin Pk	In planning phase, 2018; implementation expected 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
Siskiyou County, Agritourism Technical Advisory Committee, Planning	AG1, AG2, and RR Zoning Modifications for Agritourism	Siskiyou County, CA	In planning phase, 2018	Siskiyou County 2018a	<a href="https://www.co.siskiyou.ca.us/sites/default/files/public_docs/TAC_20180606_AgritourismTACResolution_Signed20180517.pdf">https://www.co.siskiyou.ca.us/sites/default/files/public_docs/TAC_20180606_AgritourismTACResolution_Signed20180517.pdf</a>
Siskiyou County, Multispecies Livestock Technical Advisory Group, Planning	AG1, AG2, and RR Zoning Modifications to allow certain pastured hog and poultry operations	Siskiyou County, CA	In planning phase, 2018	Siskiyou County 2018b	<a href="https://www.co.siskiyou.ca.us/sites/default/files/public_docs/TAC_20180606_MultispeciesTACResolution_Signed20180517.pdf">https://www.co.siskiyou.ca.us/sites/default/files/public_docs/TAC_20180606_MultispeciesTACResolution_Signed20180517.pdf</a>
Humboldt County Planning and Building Department	Titlow Hill General Plan Amendment, Zone Reclassification, and Subdivision Application—historic illegal subdivisions with residential and agricultural development proposed to be corrected over an area of 6,244 acres; the existing illegal development includes surface water diversions as water sources, and septic systems for the houses	Central Humboldt County, south of SR 199 and west of Titlow Hill Road; 12 miles west of Willow Creek	In planning phase, 2018	Humboldt County 2018e	<a href="https://humboldt.gov.org/DocumentCenter/View/62953/Titlow-Hill-Extended-Notice-of-Preparation-of-a-Draft-Environmental-Impact-Report-1-31-18-PDF?bidId=">https://humboldt.gov.org/DocumentCenter/View/62953/Titlow-Hill-Extended-Notice-of-Preparation-of-a-Draft-Environmental-Impact-Report-1-31-18-PDF?bidId=</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
JH Ranch; planning processing by Siskiyou County	Planned Development (PD) Plan Amendment for JH Ranch—increase the amount of land in the existing PD District from 79 acres to 201 acres, and modify the PD to accommodate existing operations; retain existing maximum capacity of 482 persons; retain and renovate guest cabins, tent-like cabins, staff cabins, homes, and bunk cabins	French Creek Road, Siskiyou County	In planning phase, 2016	Siskiyou County 2018c	<a href="https://www.co.siskiyou.ca.us/content/planning-division-jh-ranch-documentation">https://www.co.siskiyou.ca.us/content/planning-division-jh-ranch-documentation</a>
Kidder Creek Orchard; planning processing by Siskiyou County	Kidder Creek Orchard Camp Zone Change and Use Permit—rezoning 170 acres from Timberland Production District to Rural Residential Agricultural (40-acre minimum parcel size); increase of allowable camp occupancy from 165 to 844; increase of physical camp size from 333 acres to 580 acres; structures, recreation features, a pond, and ancillary activities	South Kidder Creek Road, 2 miles west of SH 3, south of Greenview in the Scott Valley, Siskiyou County	In planning phase, 2018	Siskiyou County 2018d	<a href="https://www.co.siskiyou.ca.us/content/planning-kidder-creek-orchard-camp">https://www.co.siskiyou.ca.us/content/planning-kidder-creek-orchard-camp</a>
Grady Padgett	Cannaworx Zone Change—rezone 44 acres from Open Space to Non-Prime Agricultural, Initial Study / Mitigated Negative Declaration	21635 Walker Road, 11 miles southwest of Yreka, Klamath River, Siskiyou County, CA	Adopted, 2018	Siskiyou County 2018e	<a href="https://www.co.siskiyou.ca.us/sites/default/files/public_docs/PLN-20180525_Z1505_CannaworxNOA_NOI.pdf">https://www.co.siskiyou.ca.us/sites/default/files/public_docs/PLN-20180525_Z1505_CannaworxNOA_NOI.pdf</a>
Gary Black	Grenada Irrigation District, Huseman Relocation Instream Phase	Shasta River, CA	Funded in 2010	NFWF 2016	<a href="https://www.nfwf.org/klamathriver/Documents/krcef_2015_totalprojects.pdf">https://www.nfwf.org/klamathriver/Documents/krcef_2015_totalprojects.pdf</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
Judi Nelson and Walter Wood	Proposed Negative Declaration—rezone 33.53 acres from Unclassified to Agriculture; Use Permit to allow operation of a six-bedroom bed and breakfast facility, conference room, outdoor kitchens, a barn and agricultural building	6301 South Fork Road, nine miles south of Highway 299, near the town of Salyer, Trinity County, CA	In planning phase, 2018	Trinity County 2018	<a href="http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports">http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports</a>
Chris Yordana	Rezone from Unclassified to Rural Residential, and create four parcels (20-acre minimum)—286.35-acre project area	420 Blake Mountain Trail, Hyampom, Trinity County, CA	In planning phase, 2018	Trinity County 2018	<a href="http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports">http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports</a>
Nikola Rakocevic	Rezone from Special Unit Development to Rural Residential (10-acre minimum)—40-acre project area	701 Lorenz Rest, off Tucker Hill Road, Douglas City, Trinity County, CA	In planning phase, 2018	Trinity County 2018	<a href="http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports">http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports</a>
Peter Dimopoulos	Rezone two parcels from Unclassified to Agriculture, 40-acre minimum—10-acre project area	18393 Zenia-Lake Mountain Road, Zenia, Trinity County, CA	In planning phase, 2017	Trinity County 2018	<a href="http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports">http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports</a>
Bob Morris	Rezone property from Unclassified to Agricultural and Agricultural Forest—29.5-acre area	4060 and 4311 Little Browns Creek Road (County Road No. 223), Trinity County, CA	In planning phase, 2016	Trinity County 2018	<a href="http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports">http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports</a>
<b>Mining and Mining Withdrawal Projects</b>					
USDA Forest Service—Klamath National Forest (Federal Lands)	Brooks Mine—existing Brooks mining claim with a new plan of operations over an area of 20 acres; mining using backhoe, 2.5-cubic-yard dump truck, grizzly, and trammel; opening existing road to new extraction site; Water Board Waiver Category A	Happy Camp Ranger District, Klamath National Forest; near Humbug Creek	On hold, 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>



Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
USDA Forest Service— Klamath National Forest (Federal Lands)	China Point—response to proposed Plan of Operations to mine the 30-acre China Point unpatented claim in compliance with the General Mining Act of 1872	Salmon River Ranger District, Klamath National Forest; located between the NF Salmon River and the Salmon River Rd; NE of Forks of Salmon in Siskiyou City, South of the Sawyers Bar Road and North of the N Fork Salmon Rd	In planning phase, 2018; implementation expected 2019	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
USDA Forest Service— Klamath National Forest (Federal Lands)	Discovery Day Mine—Plan of Operations proposed to mine 20 acres of the 950-acre Discovery Day claim, which is an established mine site with a road, three working pads, and underground tunnels	Salmon River Ranger District, Klamath National Forest; located on the southeast side of a ridge between the east and west fork drainages of Knownothing Creek in the Klamath National Forest, approximately three miles southeast of Forks of Salmon	In planning phase, 2018; implementation expected 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
USDA Forest Service— Klamath National Forest (Federal Lands)	Schwartz and Leff Mineral Withdrawal—application to administratively withdraw 39.6 acres of National Forest System Lands along the North Fork Salmon River from mineral location and entry under the U.S. Mining Laws for a period of 20 years to protect cultural resources (mining history and intact structures)	Salmon River Ranger District, Klamath National Forest; located on the North Fork of the Salmon River about four miles upriver from the community of Forks of Salmon in Siskiyou County	In planning phase, 2018; implementation expected 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
USDA Forest Service—Klamath National Forest (Federal Lands)	Wisniski Special Use Permit Amendment—1/4-mile existing road access to the Mountain Laurel Mine for commercial haul of ore to mill site, and add a private water line; Water Board Waiver Category B	Salmon River Ranger District, Klamath National Forest, CA	In planning phase, 2018; implementation expected 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
Del Norte County—Randy Hooper, Assistant Director	Annual Surface Mine Use Permit Renewals	Del Norte County	In planning phase, 2018	Del Norte County Planning Commission 2018	<a href="http://countyofdelnorte.us/agendas/agenda_management/agendas/PLN1345.pdf">http://countyofdelnorte.us/agendas/agenda_management/agendas/PLN1345.pdf</a>
Hoopa Valley Tribe	Copper Bluff Mine Remediation—copper, zinc, silver, and gold; involves heavy metals; acid mine drainage flows into the Trinity River; potential EPA Superfund Project	Hoopa Valley Reservation, adjacent to State Highway 96, Humboldt County, CA	Undefined (Ongoing)	USEPA 2018	<a href="https://www.epa.gov/newsreleases/us-epa-marks-one-year-anniversary-superfund-task-force-report-visit-copper-bluff-mine">https://www.epa.gov/newsreleases/us-epa-marks-one-year-anniversary-superfund-task-force-report-visit-copper-bluff-mine</a>
<b>Infrastructure and Energy Projects</b>					
Pembina (as of 2017); previously Veresen	Jordan Cove Energy Project / Pacific Connector Gas Pipeline—234 mi, 36 in diameter	Malin, Klamath County, OR through Douglas and Jackson Counties to Coos County, OR (passes near Klamath Falls), includes Deschutes National Forest (USDA Federal Lands)	In planning phase, 2018	FERC 2015	<a href="https://www.ferc.gov/industries/gas/enviro/eis/2015/09-30-15-eis.asp">https://www.ferc.gov/industries/gas/enviro/eis/2015/09-30-15-eis.asp</a>
USDA Forest Service—Klamath National Forest (Federal Lands)	Ayres Waterline New Special Use Permit—special use management; water system consisting of 490 feet of 2-inch PVC pipe	Happy Camp Ranger District, Klamath National Forest; near Grider Creek, West Grider-Klamath River 7th Field Watershed	In planning phase, 2018; implementation expected in 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
USDA Forest Service— Klamath National Forest (Federal Lands)	Caltrans Culvert New Special Use Permit—36 in culvert replacement using jack bore method	Happy Camp Ranger District, Klamath National Forest; Milepost 43.01 on State Highway 96, near Happy Camp, CA	Completed	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
USDA Forest Service	Lewiston Community Services District Wastewater Collection, Treatment and Disposal Project—this project will update and consolidate three existing community wastewater, treatment, and disposal systems over 96.06 acres; reclamation will provide a license for associated upgrades and continued use of existing percolation beds for the treatment system adjacent to Trinity River	Lewiston, Trinity County, CA; Trinity River bank—outside 100-year flood zone (due to construction of berms); about 16 miles southeast of Weaverville	FONSI signed in 2018	USBR 2018b	<a href="https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=34041">https://www.usbr.gov/mp/nepa/nepa_project_details.php?Project_ID=34041</a>
USDA Forest Service— Klamath National Forest (Federal Lands)	Siskiyou Telephone Fiber Optic Cable Installation Downriver CE / Special Use Permit Amendment (OAK57)—includes jack and bore methods under creeks, and hanging conduits over Clear Creek and Dillon Creek; Fish and Wildlife Stream Crossing Agreement required; 21.9 miles of road, 10,020 feet of trenching, 87,784 feet of boring	Happy Camp Ranger District, Klamath National Forest; from 1/2 mile below Benjamin Creek to Dillon Creek, along Highway 96 (Post Miles 38.4-16.2); Oak Flat Creek, Benjamin Creek-Klamath River, Slippery Creek-Clear Creek 7th field watersheds	In planning phase, 2018; expected implementation 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
USDA Forest Service— Klamath National Forest (Federal Lands)	PacifiCorp Powerline Special Use Permit Renewal CE—30 miles of powerline replacement within a 270-acre project area; NCRWQCB Waiver exempt	Happy Camp Ranger District, Klamath National Forest; starts off County Road on Scott River Road, ends just south of Little Grayback Mountain	On hold, 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
USDA Forest Service—Klamath National Forest (Federal Lands)	Bentley, H. New Special Use Permit—above-ground water-line, no new disturbance proposed	Salmon River Ranger District, Klamath National Forest; McNeal Creek-South Fork 7th Field Watershed	In planning phase, 2018; expected implementation 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
USDA Forest Service—Klamath National Forest (Federal Lands)	California Highway Patrol Special Use Permit Renewal CE—radio service facility on Eddy Gulch	Salmon River Ranger District, Klamath National Forest; Eddy Gulch Communications Site, about two miles north of Sawyers Bar, CA in the Eddy Gulch 7th field watershed	On hold, 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
USDA Forest Service—Klamath National Forest (Federal Lands)	Siskiyou Telephone Special Use Permit Amendment for Phone Line Installation—amend Special Use Permit to trench 1,100 feet to install an underground phone line to a private residence	Scott River Ranger District, Klamath National Forest; Lower Indian Creek 7th field watershed	On hold, 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
USDA Forest Service—Klamath National Forest (Federal Lands)	Burnett Road Easement New Special Use Permit—1,500-foot-long, 12-foot-wide road access to private property, and 1,000 foot of two-inch water-line	Happy Camp Ranger District, Klamath National Forest	In planning phase, 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
USDA Forest Service—Klamath National Forest (Federal Lands)	Schroeder Road Access New Special Use Permit—driving on 435 lineal feet of existing historic roadbeds to access private property; Water Board Waiver Category A	Goosenest Ranger District, Klamath National Forest; 12 miles southwest of Macdoel, CA, and 4 miles northwest of Grass Lake, CA	In planning phase, 2018; implementation expected in 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
Siskiyou County Public Works	Guys Gulch Road Realignment—Guys Gulch Bridge and Approaches; Schulmeyer Gulch Bridge Approaches	Intersection of Guys Gulch and Old Highway 99 Intersection of Schulmeyer Gulch and Old Highway 99	In Progress, 2017–2018	Siskiyou County 2017	<a href="https://www.co.siskiyou.ca.us/content/public-works-contract-16-07-guysschulmeyer-gulch-bridges">https://www.co.siskiyou.ca.us/content/public-works-contract-16-07-guysschulmeyer-gulch-bridges</a>
Siskiyou County Public Works	Salmon River Road Flood Damage Repair—Federal Emergency Aid Relief Project	Salmon River Road, M.P. 5.76	In Progress, 2018	Siskiyou County 2018f	<a href="https://www.co.siskiyou.ca.us/content/public-works-contract-17-02-salmon-rv-rd-flood-damage-repair-at-mp-576">https://www.co.siskiyou.ca.us/content/public-works-contract-17-02-salmon-rv-rd-flood-damage-repair-at-mp-576</a>
Siskiyou County Public Works	Wooley Creek Bridge Rehabilitation and Pier Repair	Wooley Creek Bridge (Bridge 2C-016)	Pending, 2018	Siskiyou 2018g	<a href="https://www.co.siskiyou.ca.us/content/public-works-fap-no-brlo-5902080-wooley-creek-bridge-rehabilitation-and-pier-repair">https://www.co.siskiyou.ca.us/content/public-works-fap-no-brlo-5902080-wooley-creek-bridge-rehabilitation-and-pier-repair</a>
Siskiyou County, Planning	Denny Point Tower—80-foot lattice communications tower, cellular equipment shelters, electrical backup generators, cellular equipment cabinets, a foot access road, and trench for lines over a 7,000-square-foot project area	Near 3801 McConaughy Gulch Road, Etna, Siskiyou County, CA	In planning phase, 2018	Siskiyou County 2018h	<a href="https://www.co.siskiyou.ca.us/sites/default/files/public_docs/PC_20180615_DraftISMND_UP1804_Topsites-Plank.pdf">https://www.co.siskiyou.ca.us/sites/default/files/public_docs/PC_20180615_DraftISMND_UP1804_Topsites-Plank.pdf</a>
Del Norte County Community Development Department, Engineering Division	Hunter Creek Bridge Replacement Project	Requa Road at Hunter Creek, Klamath, CA	In planning phase, 2018; construction anticipated in 2020	Del Norte County 2017a	<a href="http://www.co.del-norte.ca.us/departments/community-development-department/engineering-division/projects">http://www.co.del-norte.ca.us/departments/community-development-department/engineering-division/projects</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
Trinity County Department of Transportation, and Central Federal Lands Highway Division	Mitigated Negative Declaration for rehabilitation of Van Duzen Road and Ruth Zenia Road, which provide primary access to Six Rivers National Forest	Van Duzen Road (Post Miles 9.5–9.7, 11.2–11.6, and 12–15), 68 miles southeast of Eureka, Trinity County, CA	In planning phase, 2018	Trinity County Planning Commission 2018	<a href="http://www.trinitycounty.org/sites/default/files/Planning/document%20s/Agenda_Minutes/2018/01_2018/Item%206%20-%20FHWA%20RuthZenias_VanDuzen%20Staff%20Report%20P-17-11.pdf">http://www.trinitycounty.org/sites/default/files/Planning/document%20s/Agenda_Minutes/2018/01_2018/Item%206%20-%20FHWA%20RuthZenias_VanDuzen%20Staff%20Report%20P-17-11.pdf</a>
Klamath Community Services District	Coastal Development Permit for a Wastewater Treatment System Expansion	Corner of Highway 101 and Klamath Boulevard, and the parcel directly across the Highway on Highway 101, Klamath	In planning phase, 2018	Del Norte County 2018a	<a href="http://countyofdelnorte.us/agendas/agenda_management/agendas/PLN1355.pdf">http://countyofdelnorte.us/agendas/agenda_management/agendas/PLN1355.pdf</a>
City of Yreka	Ringe Pool Facility Condition Assessment—options include: (1) short- and long-term repairs, (2) replacing the existing facility with new pools, (3) demolishing the facility and returning it to lawn; 0.88-acre site	Ringe Memorial Swim Center, Knapp St, Yreka	In planning phase, 2018	McClland Architecture + Planning 2018	<a href="https://ci.yreka.ca.us/sites/ci.yreka.ca.us/assets/files/Ringe_FC_A_Full_Report.09.17.18.pdf">https://ci.yreka.ca.us/sites/ci.yreka.ca.us/assets/files/Ringe_FC_A_Full_Report.09.17.18.pdf</a>
City of Yreka	Proposed Mitigated Negative Declaration and Initial Study: Yreka Water Supply and Storage Improvements—includes public water system improvements, water tank replacements, installation of water mains, and installation of a new well	City of Yreka, unincorporated area of Siskiyou County, with improvements at: Lower Humbug Water Tank Site, Shasta Belle Water Tank Site, and Davis Well Site	In initial planning phase, 2017	City of Yreka 2017	<a href="http://ci.yreka.ca.us/sites/ci.yreka.ca.us/assets/files/P_C_Mintues_12_20_17.pdf">http://ci.yreka.ca.us/sites/ci.yreka.ca.us/assets/files/P_C_Mintues_12_20_17.pdf</a>
City of Yreka	Filter Pump Station / Primary Coagulant Facilities at Injection Station	Yreka, CA, about 20 miles from the Fall Creek Pump Station	Constructed	S. Baker, City Manager, pers. comm., October 2018	N/A

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
City of Yreka	Water Treatment Plant Upgrade	Yreka, CA	In engineering phase, 2018	S. Baker, City Manager, pers. comm., October 2019	N/A
City of Yreka	2.5 million gallon Clear Well	North end of Butcher Hill, Yreka, CA	Recently constructed	S. Baker, City Manager, pers. comm., October 2020	N/A
City of Yreka	Rehabilitation of Butcher Hill Reservoir	Yreka, CA	Recently constructed	S. Baker, City Manager, pers. comm., October 2021	N/A
City of Yreka	Backwash Pond Improvements	Intersection of Montague-Ager and Yreka-Ager, Yreka, CA	Recently constructed	S. Baker, City Manager, pers. comm., October 2022	N/A
AT&T mobile	Use Permit for a 96-foot cellular tower and appurtenant facilities on private property—800-square-foot project area	1240 Old Lewiston Road, Lewiston, Trinity County, CA	In planning phase, 2018	Trinity County 2018	<a href="http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports">http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports</a>
Yurok Tribe	Coastal Grading Permit—waterline and storage tank replacement	Requa Area, Klamath, Del Norte County, CA	In planning phase, 2017	Del Norte County 2017b	<a href="http://countyofdelnorte.us/agendas/agendas/_management/agendas/PLN1216.pdf">http://countyofdelnorte.us/agendas/agendas/_management/agendas/PLN1216.pdf</a>
Resighini Rancheria	Extension of Time for a Coastal Grading Permit for Road Improvements and Culvert Replacement	Klamath Beach Road, and Waukell and Juniors Creek, Klamath, Del Norte County, CA	In planning phase, 2018	Del Norte County 2018	<a href="http://countyofdelnorte.us/agendas/agendas/_management/agendas/PLN1256.pdf">http://countyofdelnorte.us/agendas/agendas/_management/agendas/PLN1256.pdf</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
<b>Other Rezoning and Development Projects</b>					
USDA Forest Service—Forest Products Laboratory, Klamath National Forest	Nanocellulose Facility—microscopic timber processing	Yreka, CA	In planning phase, 2016	USDA Forest Service 2016	<a href="https://www.fs.usda.gov/detail/klamath/landmanagement/?cid=FSEPRD499729">https://www.fs.usda.gov/detail/klamath/landmanagement/?cid=FSEPRD499729</a>
USDA Forest Service—Klamath National Forest (Federal Lands)	Cecilville Fire & Hose Company Special Use Permit Amendment—installation of service building for the storage of fire trucks and rescue vehicles	Salmon River Ranger District, Klamath National Forest	In planning phase, 2018; implementation expected 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
Siskiyou County (Siskiyou County Planning/Board of Supervisors)	Siskiyou County Jail Project—39,000 square feet on an 84-acre parcel	269 Sharps Road, Yreka, Siskiyou County	In initial planning phase, 2018	Siskiyou County 2018i	<a href="https://www.co.siskiyou.ca.us/sites/default/files/public_docs/PLN-20180521_NOI_MND.pdf">https://www.co.siskiyou.ca.us/sites/default/files/public_docs/PLN-20180521_NOI_MND.pdf</a>
Trinity County	Use Permit to construct 96-bed jail—31,000 square feet on an 11.9-acre site	701 Tom Bell Road, Weaverville, Trinity County, CA	In planning phase, 2016	Trinity County Planning Commission 2016	<a href="http://www.trinitycounty.org/sites/default/files/Planning/documents/Agenda_Minutes/2016/11_2016/Item%206%20-%20Use%20Permit%20for%20Construction%20of%20New%20Jail.pdf">http://www.trinitycounty.org/sites/default/files/Planning/documents/Agenda_Minutes/2016/11_2016/Item%206%20-%20Use%20Permit%20for%20Construction%20of%20New%20Jail.pdf</a>



Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
Trinity County	General Plan Amendment and Rezoning in Weaverville Planning Area (existing land use is lumber mill and undeveloped land)	Lance Gulch Road, between Browns Ranch Road and Highway 299	In planning phase, 2017	Trinity County Planning Commission 2017	<a href="http://www.trinitycounty.org/sites/default/files/Planning/documents/Agenda_Minutes/2017/02_2017/Item%205%20-%20GPA%20%26%20Rezone%20COT%20%26%20TRLC%20PW-17-01.pdf">http://www.trinitycounty.org/sites/default/files/Planning/documents/Agenda_Minutes/2017/02_2017/Item%205%20-%20GPA%20%26%20Rezone%20COT%20%26%20TRLC%20PW-17-01.pdf</a>
Karuk Tribe	Karuk Tribe Casino Project / Rain Rock Casino—36,497 sq-ft	City of Yreka, CA—Tribal Trust land and land held in fee title by the Tribe	Under construction, 2017	Siskiyou County 2018j	<a href="https://www.co.siskiyou.ca.us/content/planning-division-karuk-tribe-casino-project">https://www.co.siskiyou.ca.us/content/planning-division-karuk-tribe-casino-project</a>
Cross Development, with City of Yreka as lead agency	Yreka Dollar General Retail Store Project—includes a parking lot, landscaping / tree planting, a retaining wall, and stormwater retention areas on a 3.43-acre parcel	North side of Montague Road / State Route 3 between N. Main St and Deer Creek Way	In planning phase, 2018	City of Yreka 2018	<a href="http://ci.yreka.ca.us/planning-commission/minutes">http://ci.yreka.ca.us/planning-commission/minutes</a>
Sousa Ready Mix, LLC; with City of Yreka as lead agency	Sousa Ready Mix Concrete Batch Plant Project—Conditional Use Permit to allow the construction of a 4.26-acre concrete batch plant, complete with a small portable office trailer, aggregate storage area, truck and auto parking, precast concrete area, and concrete truck washout basin	319 South Phillippe Lane, Yreka, CA	In planning phase, 2016	City of Yreka 2018	<a href="http://ci.yreka.ca.us/planning-commission/minutes">http://ci.yreka.ca.us/planning-commission/minutes</a>
Fruit Growers Supply Company, with City of Yreka as lead agency	Fruit Growers Supply Company Sawmill Project: Initial Study / Mitigated Negative Declaration	Industrial area at the eastern edge of Yreka, CA; accessed via South Phillippe Lane 229 South Phillippe Lane, Yreka, CA	In planning phase, 2018	City of Yreka 2018	<a href="http://ci.yreka.ca.us/planning-commission/minutes">http://ci.yreka.ca.us/planning-commission/minutes</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
SK Yreka Inc.	Consideration of proposed categorical exemption and Conditional Use Permit to construct, establish, and operate a new gas station and convenience store in the Commercial Tourist Zone	1801 Fort Jones Road, Yreka, CA	In planning phase, 2017	City of Yreka 2018	<a href="http://ci.yreka.ca.us/planning-commission/minutes">http://ci.yreka.ca.us/planning-commission/minutes</a>
Campora Propane (Contractor Rick Bettis)	Consideration of proposed Categorical Exemption and Conditional Use Permit for construction establishment and operation of a fuel storage yard facility with two 30,000-gallon bulk propane storage tanks in the Light Industrial Zone	1420 Mill Road, Yreka, CA	In planning phase, 2016	City of Yreka 2018	<a href="http://ci.yreka.ca.us/planning-commission/minutes">http://ci.yreka.ca.us/planning-commission/minutes</a>
Debora Behm	Consideration of proposed Categorical Exemption and Conditional Use Permit for the establishment and operation of a Microbrewery	204 W. Miner St, CA	In planning phase, 2016	City of Yreka 2018	<a href="http://ci.yreka.ca.us/planning-commission/minutes">http://ci.yreka.ca.us/planning-commission/minutes</a>
Terry Mines	Rezone of four parcels from Highway Commercial to Industrial—5.65-acre project area	Marshall Ranch Road, Douglas City	In planning phase, 2018	Trinity County 2018	<a href="http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports">http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports</a>
Steve Toney	Subdivide one parcel into two lots (A & B) and rezone Parcel B from General/Commercial to Mobile Home/Special Occupancy Park—8.5-acre project area	North and East side of the Trinity Plaza Shopping Center, Trinity County, CA	In planning phase, 2018	Trinity County 2018	<a href="http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports">http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports</a>
Stephen & Susan Adams	One-year time extension of tentative map approval to create three parcels of approximately 40 acres each (currently vacant and residential)—120-acre project area	Van Duzen Road, 6.8 miles south of intersection with SH 36, Scott Glade, Mad River area (Ag Forest Zone), Trinity County, CA	In planning phase, 2017	Trinity County 2018	<a href="http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports">http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
Mark and Vallerie Hollister	One-year time extension of tentative map approval to create four parcels and a remainder varying from 1 acre to 17 acres	1281 Carrville Loop Road, Coffee Creek (Residential Zone), Trinity County, CA	In planning phase, 2016	Trinity County 2018	<a href="http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports">http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports</a>
Darrell & Marilyn Marlin	One-year time extension of tentative map approval to create two parcels of 2.5 acres each—5-acre total area	60 New Road, off Union Hill Road, Douglas City (Rural Residential Zone), Trinity County, CA	In planning phase, 2016	Trinity County 2018	<a href="http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports">http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports</a>
Yingling Trust	One-year time extension of tentative map approval to create four parcels of approximately 2 acres each—8-acre total area	Private Road off Angel Hill Road, near Highway 3, Weaverville	In planning phase, 2016	Trinity County 2018	<a href="http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports">http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports</a>
Donn and Oralynn Mulvey	Mulvey General Plan Amendment / Zone Change (from Residential Duplex to Commercial) / Parcel Map Creating Two Parcels	201 Clinic Avenue, Hayfork, Trinity County, CA	In planning phase, 2016	Trinity County 2018	<a href="http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports">http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports</a>
Darwin Edge	Approve the Tentative Parcel Map for the subject property creating three parcels of 0.84 acres each	72 Bennett Road (County Road No. 249), Trinity County, CA	In planning phase, 2016	Trinity County 2018	<a href="http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports">http://www.trinitycounty.org/Agendas-Minutes-Staff-Reports</a>

Applicant or Implementing Agency	Project/Program Name	Location	Timeframe	Reference	Website
<b>Recreation Projects</b>					
USDA Forest Service— Klamath National Forest (Federal Lands)	Recreation Outfitter and Guides Special Use Permits Analysis— reauthorization of Recreation Outfitter and Guide Special Use Permit	Scott River Ranger District, Klamath National Forest; Marble Mountains, Trinity Alps, Russian Wilderness, and nearby non-wilderness area	In planning phase, 2018; implementation expected 2018	USDA Forest Service 2018a	<a href="https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf">https://www.fs.fed.us/sopa/components/reports/sopa-110505-2018-04.pdf</a>
Del Norte County	Off-Highway Motor Vehicle Recreation (OHV) Grants Program, Plan, and actions	Del Norte County	Plan completed, 2018	Del Norte County 2018b	<a href="http://www.co.del-norte.ca.us/departments/community-development/planning-division/del-norte-county-ohv-planning-project">http://www.co.del-norte.ca.us/departments/community-development/planning-division/del-norte-county-ohv-planning-project</a>

### 3.24.1.2 Geographic Scope

CEQA requires that a geographic scope of the area affected by the cumulative effect is defined, and a reasonable explanation for the geographic limitation used (CEQA Guidelines Section 15130[b][1][B][3]). The Areas of Analysis for the assessment of cumulative effects of the Proposed Project, in combination with other projects, are stated at the start of the cumulative effects' analyses for each resource area. The Areas of Analysis for some resource areas have clearly defined cumulative assessment boundaries, while others are more general in nature owing to the type and nature of the potential impacts.

### 3.24.1.3 Timeframe

CEQA requires consideration of past, present, and probable future cumulative effects (CEQA Guidelines Section 15130[b]). Cumulative effects may occur over a longer timeframe than project-specific effects, and the timeframe for the cumulative effects analysis varies by environmental resource and impact. The Proposed Project would be implemented over several years (Table 2.7-1). For several resource area impacts, the cumulative effects analysis timeframe is the duration of pre-dam removal activities (pre-dam removal years 1–3) and dam deconstruction (dam removal years 1 and 2). For other resource area impacts, long-term effects could occur after dam removal, so for these a longer timeframe is considered. The timeframes for long-term cumulative effects are based on the best available existing information and consider the inherent difficulties of long-term forecasting. Unless otherwise specified, the timeframe for cumulative effects analyses is the same as for Proposed Project-related resource effects. As with the analysis of Proposed Project impacts, the analysis of cumulative effects uses 2016 conditions (issuance of the Notice of Preparation) as the baseline for existing resource conditions. Unless otherwise specified, historical trends and the effects of past projects are part of the existing conditions.

### 3.24.1.4 Mitigation

An EIR must examine reasonable, feasible options for mitigating or avoiding the project's contribution to any significant cumulative effects (CEQA Guidelines Section 15130[b][1][B][5]). Additionally, no public agency can approve or carry out a project with an EIR that identifies significant impacts, unless the public agency makes one or more written findings for each of those significant effects (CEQA Guidelines Section 15091). This assessment of cumulative effects identifies feasible mitigation measures for effects of the Proposed Project determined to be cumulatively considerable.

## 3.24.2 Water Quality

The geographic scope for cumulative water quality effects is the same as the Area of Analysis for water quality, as described in Section 3.2.1 [*Water Quality*] *Area of Analysis*. The geographic scope includes the Klamath River from the Hydroelectric Reach<sup>174</sup> in the Upper Klamath Basin through the Lower Klamath River from its confluence with the Trinity River, the Klamath River Estuary, and the Pacific Ocean nearshore environment (Figure 3.2-1).

---

<sup>174</sup> Reaches of the Klamath River upstream of the Oregon-California state line (RM 214.1) are considered to the extent cumulative actions in those reaches influence water quality downstream in California.

Water quality existing conditions in the Area of Analysis are described in Section 3.2.2 *[Water Quality] Environmental Setting* and Appendix C *Water Quality Supporting Technical Information*. The spatial and temporal trends in water temperature, suspended sediments, nutrients, dissolved oxygen, pH, chlorophyll-a and algal toxins, and inorganic and organic contaminants conditions for the Klamath River, from the Hydroelectric Reach through the Klamath River Estuary and the Pacific Ocean nearshore environment, are all detailed for the Area of Analysis. Section 3.2.2 *[Water Quality] Environmental Setting* includes consideration of major past or ongoing projects that have impacted, or currently impact, water quality. Additionally, the reaches of the Klamath River listed as impaired on the Clean Water Act (CWA) section 303(d) list are presented in Section 3.2.3 *[Water Quality] Significant Criteria*, Table 3.2-3.

This cumulative impact analysis focuses on the potential impacts of the Proposed Project combined with other closely related projects that are not already considered in the analysis of water quality resource area effects (Section 3.2). The non-project activity types shown below have been evaluated for potential cumulative impacts on water quality and include those activities that would potentially alter water temperature, suspended sediments, nutrients, dissolved oxygen, pH, chlorophyll-a and algal toxins, and inorganic and organic contaminants in the Klamath River within the water quality Area of Analysis. While wildfire is a natural occurrence, under climate change more frequent and intense wildfires are reasonably foreseeable (Bedsworth et al. 2018) and thus wildfires are also evaluated for potential cumulative impacts on water quality. The non-project activity types are included in Table 3.24-1).

Significance criteria for cumulative water quality impacts are the same as defined in Section 3.2.3 *[Water Quality] Significance Criteria*.

#### **Potential Cumulative Impact 3.24-1 Long-term water quality effects of the Proposed Project in combination with restoration, flow enhancement, and water quality improvement projects.**

Restoration, flow enhancement, and water quality improvement projects along the Klamath River and its tributaries (creeks and rivers) are anticipated to enhance water quality (e.g., water temperature, suspended sediments, nutrients, dissolved oxygen, pH, chlorophyll-a and algal toxins), with improvements to stream channels, riparian habitat restoration, placement of off-channel habitat features, floodplain restoration, incorporation of large wood into tributaries to the Klamath River, and increases in stream flow (Table 3.24-1).

Restoration, flow enhancement, and water quality improvement projects would have a beneficial effect on water quality in the Klamath River. As an example, the Long Term Plan to Protect Adult Salmon in the Lower Klamath River is anticipated to improve nutrient, suspended sediment (i.e., organic matter concentrations), and chlorophyll-a and algal toxin conditions during August and September by increasing the Trinity River flows into the Klamath River and diluting (i.e., lowering) the nutrient, suspended sediment, and chlorophyll-a and algal toxin concentrations in the Lower Klamath River downstream of the Trinity River. Various grants for water quality improvement projects, through money received from the USEPA through Section 319(h) of the Clean Water Act and Timber Regulation and Forest Restoration Fund, reduce nonpoint source pollution (e.g., sediments, nutrients) and address TMDL implementation in the Klamath Basin. Waste discharge requirements, waivers, and NPDES permits are issued by the North Coast

Regional Water Quality Control Board for particular projects, and are renewed with updated BMPs on a regular basis, addressing a variety of water quality parameters (e.g., water temperature, dissolved oxygen, sediment, nutrients) throughout the Klamath Basin. A number of entities involved in the Upper Klamath Basin Watershed Action Team and the Watershed Stewardship Partnership (see Table 3.24-1) implement various projects throughout the Upper Klamath Basin that improve water quality through working with landowners, agencies, and other partners to conserve, enhance, and restore natural resources. Associated improvements in water quality in the Upper Klamath River, Lower Klamath Lake, Lost River, Klamath Irrigation Project, Upper Klamath Lake, Wood River, Sprague River, and Williamson River, will ultimately improve water quality in the Hydroelectric Reach, Middle and Lower Klamath River, and Klamath River Estuary.

The conversion of the reservoir areas to free-flowing river reaches as part of the Proposed Project would have a beneficial effect on water temperature in the Hydroelectric Reach and the Middle Klamath River to the confluence with the Salmon River (Potential Impact 3.2-1) and chlorophyll-a and algal toxins in the Hydroelectric Reach, the Middle and Lower Klamath River, and the Klamath River Estuary (Potential Impact 3.2-12). Long-term increases in suspended material (Potential Impact 3.2-6 and 3.2-7) and nutrients (Potential Impact 3.2-8) due to the lack of continued interception by the Lower Klamath Project dams under the Proposed Project would have no significant impact, since the increases were relatively small compared to background conditions. The beneficial effect of restoration, flow enhancement, and water quality improvement projects on suspended materials and nutrients would potentially further reduce the relatively small long-term increases from the Proposed Project and improve water quality conditions downstream of the restoration, flow enhancement, and water quality improvement projects. As a result, the combined effect of the Proposed Project and these restoration, flow enhancement, and water quality improvement projects would be beneficial for water quality, especially for water temperature and chlorophyll-a and algal toxins. The restoration, flow enhancement, and water quality improvement projects would increase the amount of cold water flowing in the river improving water temperature conditions for salmonids, while the Proposed Project would improve water temperature by returning more natural seasonal and daily variations. In combination with restoration, flow enhancement, and water quality improvement projects, the Proposed Project would help to offset the effects of climate change on late summer/fall water temperatures, where climate change is expected to increase these temperatures in the Klamath Basin on the order of 1.8–5.4°F between 2012 and 2061 (Bartholow 2005 Perry et al. 2011).

Increases in river flows from restoration, flow enhancement, and water quality improvement projects would also be beneficial for water quality by diluting chlorophyll-a and algal toxins concentrations, while the Proposed Project would decrease high seasonal chlorophyll-a concentrations and periodically high algal toxin concentrations by eliminating the reservoir environment that currently supports growth conditions for toxin-producing nuisance blue-green algal species such as *Microcystis aeruginosa*. In combination with restoration, flow enhancement, and water quality improvement projects, the Proposed Project would help to offset the effects of climate change on the frequency of algal blooms, where climate change is generally expected to affect water quality through increased runoff and the associated potential for algal blooms (Michalak 2016).

Overall, the Proposed Project, in combination with restoration, flow enhancement, and water quality improvement projects, would result in beneficial cumulative effects on water quality.

### Significance

#### *Beneficial cumulative effects*

#### Potential Cumulative Impact 3.24-2 Short-term increases in suspended sediments under the Proposed Project in combination with the 2017 court-ordered flushing and emergency dilution flows.

Formal consultation of the NMFS and USFWS 2013 Joint Biological Opinion (2013 BiOp) (NMFS and USFWS 2013) for the USBR Klamath Irrigation Project was reinitiated in 2017 to improve management of *Ceratanova Shasta* (*C. Shasta*) infection among coho salmon in the Klamath River. Until formal consultation is completed and a new biological opinion (BiOp) is issued, USBR is required to manage *C. Shasta* by releasing additional winter-spring surface flushing flows and deep flushing flows, as well as emergency dilution flows (U.S. District Court 2017). The flushing and emergency dilution flow requirements are in addition to 2013 BiOp flow requirements, which remain in effect until formal consultation is completed. During the period when the Proposed Project would occur, the 2017 flow requirements (i.e., 2013 BiOp Flows plus the 2017 court-ordered flushing and emergency dilution flows) or the to-be-determined new BiOp flow requirements may be in effect since USBR's consultation with NMFS and USFWS on the 2013 BiOp Flows for the Klamath Irrigation Project is currently underway and is expected to be completed by August of 2019 (see also Section 3.1.6 *Summary of Available Hydrology Information for the Proposed Project*). At this time, estimates of flows that will be required under the future Klamath Irrigation Project biological opinion are speculative, so they are not included in hydrologic modeling. Potential new BiOp flow requirements under the Proposed Project are speculative in part because the fish disease conditions that prompted the flushing and emergency dilution flow requirements would be reduced due to increased dispersal of spawners and carcasses, transport of bedload, and establishment of variable flows, even if infection is not eliminated (see Section 3.3.5.5 *Fish Disease and Parasites*). Thus, it is not clear whether flushing and emergency dilution flow requirements would continue under a new BiOp after dam removal. It is also not clear if the prior location of Iron Gate Dam would remain as the compliance point if the flushing and emergency dilution flows continued. However, the 2017 flow requirements are the most reasonable assumption for conditions until formal consultation is completed and a new BiOp is issued. This is different from the existing conditions flow requirements, since the flushing flow requirements were imposed after issuance of the Notice of Preparation.

The 2017 flow requirements for the USBR Klamath Irrigation Project are generally the same as the 2013 BiOp Flows analyzed under the individual resource sections for the Proposed Project, but they also include new flushing and emergency dilution flows based on the management guidance from *Measures to Reduce Ceratanova Shasta Infection of Klamath River Salmonids: A Guidance Document* (Hillemeier et al. 2017; U.S. District Court 2017). The management guidance specifies surface and deep flushing flows downstream of Iron Gate Dam to dislodge and flush out polychaete worms attached to the streambed that host *C. Shasta*, and emergency dilution flows downstream of Iron Gate Dam to reduce disease conditions in the Klamath River, if specific disease criteria are exceeded. In the 2013 BiOp, Iron Gate Dam is the compliance point for flow requirements. Iron Gate Dam is assumed to be the



compliance point for the 2017 court-ordered flushing and emergency dilution flows since the injunction specifies the flushing and emergency flows be modeled on the management guidance and the management guidance specifies the flows occur downstream of Iron Gate Dam. Surface flushing flows of at least 6,030 cfs for a 72-hour period are required to be met by USBR every year between November 1 and April 30 to scour riverbed sediments (i.e., scour fine sediment from approximately 20 to 30 percent of the surface of the streambed). USBR is also required to release deep flushing flows averaging at least 11,250 cfs over a single 24-hour period between February 15 and May 31 every other year to scour fine sediment from between gravels and cobbles (i.e., armor layer) on the streambed and potentially move individual armor layer particles, if such a flow does not occur naturally. Deep flushing flows were first required in 2017, so according to the court order they would be required again in 2019 and 2021. The timing of surface and deep flushing flows within the specified period is left to the discretion of USBR, but the USBR is required to coordinate with the parties<sup>175</sup> specified in the U.S. District Court case regarding the timing and magnitude of the flushing flows. Emergency dilution flows of 3,000 cfs (potentially increasing to 4,000 cfs) up to a maximum volume of 50,000 acre-feet may also be required to be released by USBR from Iron Gate Dam between April 1 to June 15, if fish disease thresholds in the Klamath River downstream of Iron Gate Dam are exceeded. USBR, as part of their management of the Klamath Irrigation Project, is required to reserve the 50,000 acre-feet in case release is needed.

This Potential Cumulative Impact examines whether the Proposed Project in combination with the 2017 flow requirements (i.e., 2013 BiOp Flows plus the court-ordered flushing and emergency dilution flows) potentially would have a short-term significant cumulative effect on suspended sediments, with the incremental contribution of the Proposed Project being cumulatively considerable. As discussed in Potential Impact 3.2-3, the Proposed Project would result in a significant and unavoidable short-term impact on suspended sediment by causing suspended sediment to be greater than 100 mg/L over a continuous two-week period (i.e., the suspended sediment significance criteria), especially during the reservoir drawdown period from November to March. This impact evaluates the potential change in significance to that impact in light of the 2017 flow requirements.

Modeling of reservoir drawdown flows during representative water years indicates that the flow at Iron Gate Dam under the Proposed Project would meet the annual surface flushing requirements in all water year types except dry, but reservoir drawdown flows would only meet the biennial deep flushing flows during the above normal water year and two of the three representative wet water years (Figures 3.24-1 and 3.24-2). In years that reservoir drawdown flows meet flushing flow requirements, drawdown flows would mobilize the streambed sediments in the Middle Klamath River downstream of Iron Gate Dam to the threshold expected for dislodging and flushing the polychaete worms involved in fish disease. Suspended sediment concentrations (SSCs) estimated as part of the Proposed Project (Potential Impact 3.2-3) would include the mobilization of these streambed sediments downstream of Iron Gate Dam, and there would be no cumulative increase in suspended sediment from the combination of the Proposed Project and the 2017 flow requirements because the latter would not be required.

---

<sup>175</sup> Parties refer to Yurok Tribe, Pacific Coast Federation of Fishermen's Associations, Institute for Fisheries Resources, Klamath Riverkeeper, Hoopa Valley Tribe, National Marine Fisheries Service, Klamath Water Users Association, Sunnyside Irrigation District, Ben DuVal, Klamath Drainage District, Klamath Irrigation District, and Pine Grove Irrigation District.

In years where reservoir drawdown flows would not meet the magnitude or duration of flushing flow requirements (Figures 3.24-1 and 3.25-2), surface and/or deep flushing flow releases may still be required. These flushing flows would mobilize more sand, silt, and clay sized sediment downstream of Iron Gate Dam than would occur under the Proposed Project, resulting in higher SSCs downstream of Iron Gate Dam. Additionally, the flushing flows would likely need to be released from Keno Dam under the Proposed Project since J.C. Boyle, Copco No. 1, Copco No. 2, and Iron Gate dams would not be available to release these flows, so more sediment and increases in SSCs would potentially occur throughout the Hydroelectric Reach. Flushing flows may also increase SSCs by re-wetting and mobilizing some of the reservoir sediments that were not transported during reservoir drawdown. The flushing flows are within the range of flows modeled under the Proposed Project, so increases in SSCs under flushing flows would be within the range of SSCs modeled under the Proposed Project. While flushing flows would only occur for 72 hours (surface flushing) or 24 hours (deep flushing), they may prolong the duration of SSCs exceeding the significance criteria (i.e., 100 mg/L for a continuous two week period) compared to under the Proposed Project drawdown flows alone, if flushing flows occur when the drawdown flows are nearly or completely finished (November to March). The incremental increase in SSCs due to flushing flows are unlikely to increase the duration of SSCs above 100 mg/L for an entire two-week period since the duration of the flushing flows is 72 hours or less, but SSCs greater than 100 mg/L due to the Proposed Project that would last for less than two weeks may occur for two weeks or slightly more with the flushing flows. There are one to two months when flushing flows may increase SSCs outside of the Proposed Project reservoir drawdown period since surface flushing flows potentially would occur until April 30 and deep flushing flows potentially would occur until May 31. Thus, there would be the potential for a cumulative short-term increase in SSCs in the Hydroelectric Reach, the Middle and Lower Klamath River, and the Klamath River Estuary from the combined effect of the Proposed Project and the 2017 flow requirements in water years when the Proposed Project reservoir drawdown flows do not meet the surface and/or deep flushing flow requirements.

Drawdown Results at Iron Gate Reservoir

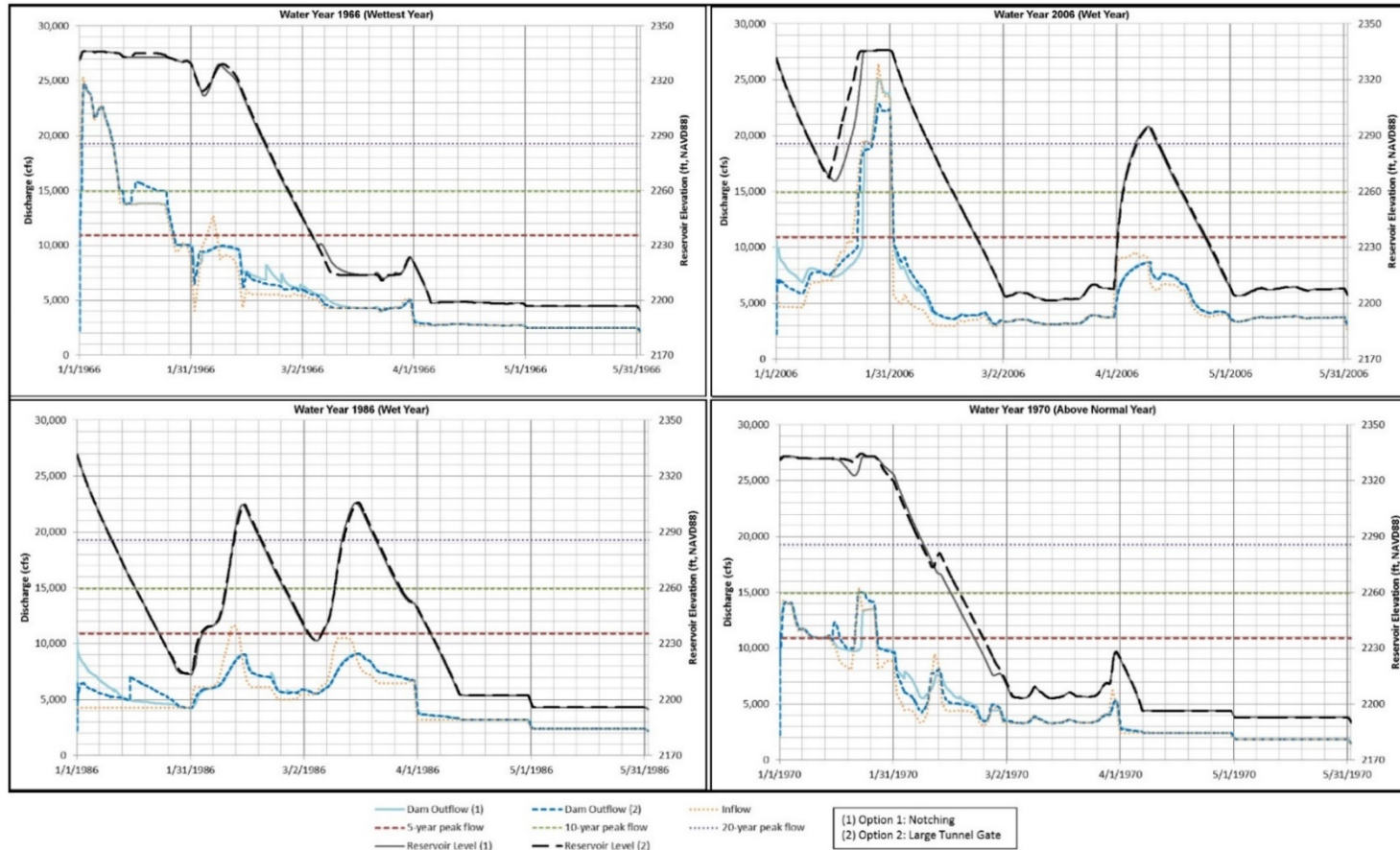


Figure 3.24-1. Proposed Project Modeled Drawdown Flow Downstream of Iron Gate Dam and Iron Gate Reservoir Elevation for Representative Wet and Above Normal Water Year Types. Dam Outflow Option 2 (Large Tunnel Gate) is included in the Proposed Project. Dam Outflow Option 1 (Notching) is presented in the Definite Plan for comparison purposes only; KRRC is not proposing notching as the preferred plan for dam demolition. Surface annual flushing flows of at least 6,030 cfs for 72 hours would occur between November 1 and April 30, while deep flushing flows of at least 11,250 cfs for 24 hours would occur every other year starting in 2017 (i.e., odd numbered years) between February 15 and May 31.

### Drawdown Results at Iron Gate Reservoir

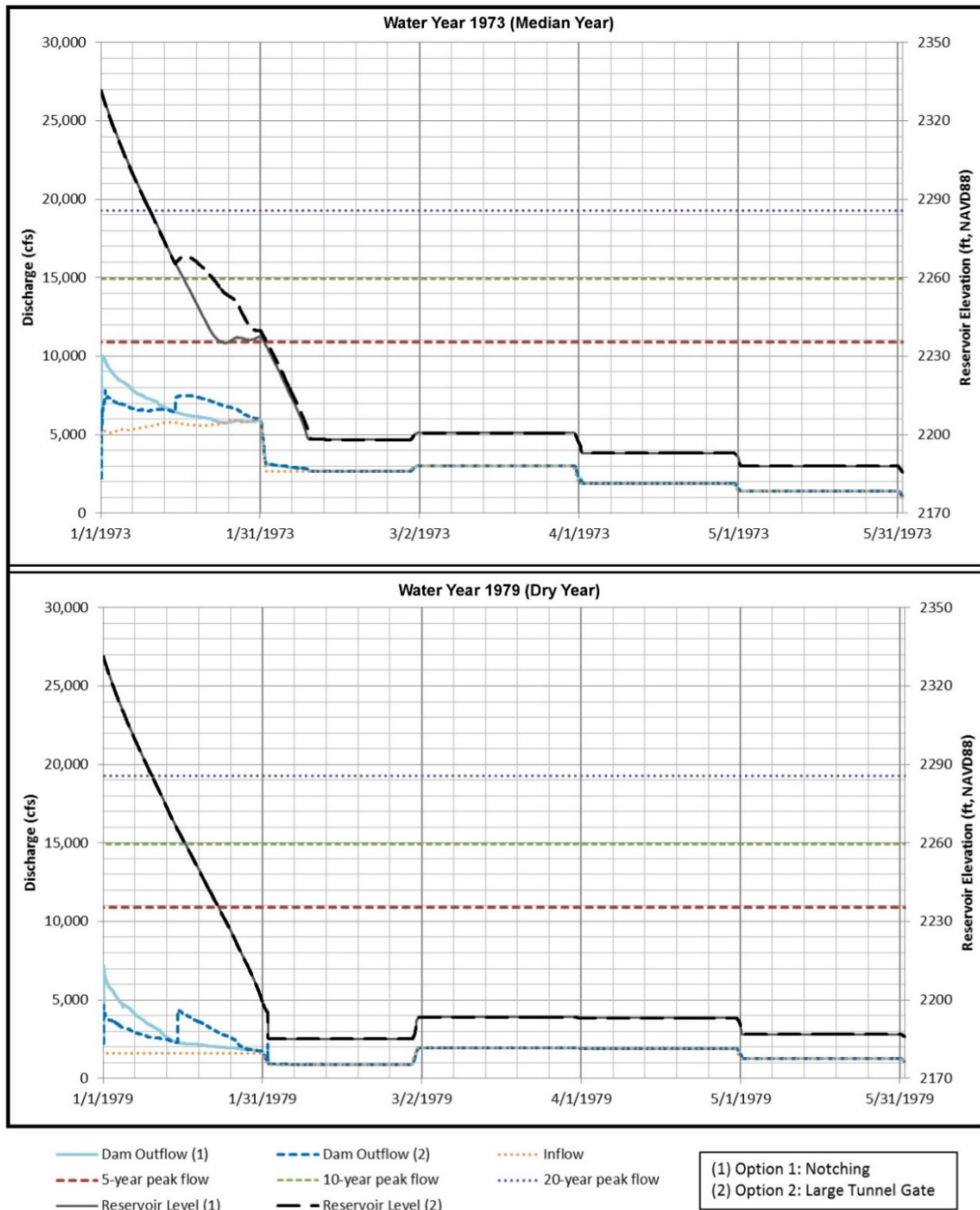


Figure 3.24-2. Proposed Project Modeled Drawdown Flow Downstream of Iron Gate Dam and Iron Gate Reservoir Elevation for Representative Median and Dry Water Year Types. Dam Outflow Option 2 (Large Tunnel Gate) is included in the Proposed Project. Dam Outflow Option 1 (Notching) is presented in the Definite Plan for comparison purposes only; KRRC is not proposing notching as the preferred plan for dam demolition. Surface annual flushing flows of at least 6,030 cfs for 72 hours would occur between November 1 and April 30, while deep flushing flows of at least 11,250 cfs for 24 hours would occur every other year starting in 2017 (i.e., odd numbered years) between February 15 and May 31.

Emergency dilution flows may be required under the 2017 flow requirements between April 1 to June 15 regardless of reservoir drawdown flows from the Proposed Project, since emergency dilution flows are based on disease thresholds in the Klamath River downstream of Iron Gate Dam. If required, emergency dilution flows (3,000 to 4,000 cfs) are unlikely to increase SSCs and/or durations due to re-wetting and mobilization of remaining floodplain and reservoir sediment deposits, because they are below the thresholds recognized for coarse and fine particle entrainment (see USBR 2012). Additionally, it is unlikely that emergency dilution flows would be required in the months just following reservoir drawdown under the Proposed Project because periods of high SSCs (Potential Impact 3.2-3) and low dissolved oxygen (Potential Impact 3.2-9) in reaches of the Klamath River downstream of Iron Gate Dam during reservoir drawdown (November 1 to March 15) would limit periphyton establishment along the streambed following drawdown, which would also limit favorable habitat for the polychaete worm that hosts fish parasites (e.g., *C. shasta*) during April 1 to June 15 of the same year. Overall, exceedances of disease thresholds that would trigger emergency dilution flows would be unlikely in the short term, particularly in dam removal year 2, and thus there would be no cumulative impact due to an increase in SSCs from emergency dilution flows associated with the 2017 court-ordered flows.

Overall, the short-term combined impact of the Proposed Project and the 2017 flow requirements (i.e., 2013 BiOp plus court-ordered flushing and emergency dilutions flows) would result in a cumulative increase in the SSCs during water years when reservoir drawdown flows are less than the surface and/or deep flushing flows. The short-term cumulative increase in SSCs would not increase the magnitude of SSCs outside the range modeled for the Proposed Project, but the cumulative effect may increase the duration that SSCs exceed the significance criterion in the Klamath River if flushing flows occur when the drawdown flows are nearly or completely finished. Thus, the Proposed Project combined with the 2017 flow requirements would potentially have a short-term cumulatively considerable impact in the Hydroelectric Reach, the Middle and Lower Klamath River, and the Klamath River Estuary.

There are no long-term cumulative water quality impacts from the Proposed Project's sediment and sediment-related (i.e., sediment-associated nutrients, oxygen demand, and inorganic and organic contaminants) impacts and the 2017 flow requirements (Potential Impacts 3.2-6, 3.2-7, 3.2-9, 3.2-11, 3.2-14, and 3.2-15). SSCs in the Hydroelectric Reach, the Middle and Lower Klamath River, and the Klamath River Estuary are predicted to resume background levels by the end of post-dam removal year 1 under all water year types, especially with revegetation of the reservoir sediments immediately following dam removal which would stabilize the sediment from erosion due to rainfall (USBR 2012). As such, the combined impact of the Proposed Project and the 2017 flow requirements would not be cumulatively considerable.

### Significance

*Cumulatively considerable* in the short term

*No significant cumulative impact* in the long term

**Potential Cumulative Impact 3.24-3 Long-term water quality effects of the Proposed Project in combination with forest and wildfire management activities.** In the water quality Area of Analysis, anticipated forest and wildfire management project activities include commercial and non-commercial thinning in stands for forest health and fuel reduction, using prescribed fire, creating strategic fuel breaks, implementing fuel treatments including under-burning and pile burning, revegetating areas to accelerate the development of mature forest, enhancing meadow conditions, improving water temperature and sediment conditions in streams, modifying road conditions, and increasing recreational opportunities. The main water quality parameters potentially adversely impacted by these activities would be water temperature, since vegetation removal allows more solar radiation to reach streams and the surrounding floodplain surfaces, and suspended sediment due to vegetation removal, prescribed burns, fuel treatments, and road construction and usage increasing erosion. The North Coast Regional Water Quality Control Board's Forest Activities Program issues waste discharge requirements and general waivers with terms and conditions to address the potential water quality problems potentially associated with a range of forest management activities on private and on US Forest Service lands (North Coast Regional Board 2018c). Reasonably foreseeable forest and wildfire management projects within or near the water quality Area of Analysis are included in Table 3.24-1.

The Proposed Project would have either a beneficial effect (Potential Impact 3.2-1) or result in no significant impact (Potential Impact 3.2-2) on water temperature in the Area of Analysis. Suspended sediment impacts from the Proposed Project would be significant and unavoidable in the short term due to increases in suspended sediment as reservoir sediments trapped behind the Lower Klamath Project dams are released (Potential Impact 3.2-3), but the other short-term and long-term impacts and potential impacts of the Proposed Project on suspended sediment in the Area of Analysis would be beneficial, not significant, or not significant with mitigation (Potential Impacts 3.2-4 through 3.2-6). Most notably, there would be no significant impact in the long term on suspended sediment concentrations from releases of reservoir sediments currently trapped by the Lower Klamath Project dams or the lack of continued interception and retention of suspended material behind the Lower Klamath Project dams. Suspended sediment concentrations in the Klamath River are expected to return to background levels by the end of post-dam removal year 1 and the long-term annual increase in suspended sediments downstream of Iron Gate Dam would be relatively small (approximately 3.4 percent) compared to the cumulative average annual sediment load from the Klamath Basin.

The Proposed Project and forest and wildfire management activities would not have a significant cumulative impact on water quality, since the cumulative magnitude of changes to water quality would not be anticipated to exceed the water quality significance criteria or impact designated beneficial uses. There would be no significant cumulative impact during drawdown of the Lower Klamath Project reservoirs and the Proposed Project impacts associated with drawdown (e.g., Potential Impact 3.2-3 and Potential Impacts 3.2-7, 3.2-9, 3.2-13, 3.2-14), because drawdown would occur during November through March when forest and wildfire management activities (e.g., prescribed burns or commercial logging) would be limited. Under the Proposed Project, dam removal also would result in a less than significant increase in inorganic (mineral) and organic (algal-derived) suspended material in the Klamath River due to the lack of continued interception and retention by the Lower Klamath Project dams (Potential Impact 3.2-5 and 3.2-6). While some forest and wildfire management activities would

potentially increase water temperature and suspended sediment in streams due to removal of vegetation cover and temporary or permanent road construction and usage for tree removal (i.e., logging), other activities would potentially improve water quality conditions by revegetating areas, enhancing riparian cover along meadow streams, and decommissioning or downgrading roads to reduce suspended sediment delivery to streams. As a result, the net effect from the anticipated forest and wildfire management activities would be less than significant and there would be no significant cumulative impact from the Proposed Project and forest and wildfire management activities.

### Significance

#### *No significant cumulative impact*

#### **Potential Cumulative Impact 3.24-4 Short-term and long-term water quality effects of the Proposed Project in combination with wildfires.**

Wildfires regularly occur within the Klamath Basin with multiple fires occurring in 2016 through 2018 (see Table 3.24-1). Under climate change, forests will be more susceptible to extreme wildfires, with an almost 50 percent increase in the frequency of extreme wildfires that burn over approximately 25,000 acres, and a 77 percent increase in the average area burned statewide by the end of the century (Bedsworth et al. 2018). Within the water quality Area of Analysis, wildfires could potentially impact water quality by reducing the forest or vegetation cover around streams. Water temperature may increase due to more solar radiation reaching the stream or sediments from burn areas depositing in streams, creating shallower streams, and resulting in more rapid warming of the streams. In the short term and long term, the Proposed Project would decrease Klamath River water temperatures in the Hydroelectric Reach and Middle Klamath River from Iron Gate Dam to the confluence with the Salmon River during the late summer/fall compared with existing conditions (Potential Impact 3.2-1), which would help to offset potential increases in water temperatures in wildfire burn areas, should they occur within these reaches in the water quality Area of Analysis. This would be a benefit of the Proposed Project in combination with wildfires. The Proposed Project would have no effect on water temperatures for the Middle Klamath River downstream from the Salmon River, the Lower Klamath River, and the Klamath River Estuary in the short term or the long term, thus there would be no cumulative impact on water temperature for the Proposed Project combined with wildfires.

Wildfires could potentially impact water quality by increasing SSCs due to increased erosion in burn areas. In the short term, the increase in suspended sediment from wildfires would be expected to be small compared to the Proposed Project impacts on suspended sediment during reservoir drawdown (Potential Impacts 3.2-3 and 3.2-4) and in comparison to natural sediment conditions in the Klamath River (USBR 2012). However, a late-season (e.g., November) wildfire during dam removal year 1 or 2 that burns the landscape near or within the water quality Area of Analysis and is followed by heavy rainstorms would potentially result in a short-term cumulative increase in the SSCs. Erosion from heavy rains on a burned area from a late-season wildfire could increase SSCs during the initial drawdown of Copco No. 1 Reservoir in dam removal year 1 or during the late-fall/early winter period in dam removal year 2 and result in SSCs exceeding the significance criteria (i.e., 100 mg/L for a continuous two week period) for a longer duration than under the Proposed Project alone. However, the short-term cumulative increase in SSCs from a late-season wildfire followed by heavy rains would not be likely to increase the magnitude of SSCs outside the range modeled for the Proposed Project. Given that the Proposed Project exceeds significance criteria

for SSCs, and because of the potential for an extended duration of elevated SSCs in the Hydroelectric Reach, the Middle and Lower Klamath River, and the Klamath River Estuary from the combination of the Proposed Project and wildfires, this short-term impact is conservatively assessed as cumulatively considerable.

In the long term, SSCs under the Proposed Project are expected to resume natural background levels by the end of post-dam removal year 1 (USBR 2012) and there would be no significant impact on SSCs in the Hydroelectric Reach, Middle and Lower Klamath River, the Klamath River Estuary, and the Pacific Ocean nearshore environment due to the release of sediments currently trapped behind the Lower Klamath Project dams (Potential Impact 3.2-3). While wildfires potentially would increase SSCs occasionally in the long term if eroded sediments from a burn area during heavy rain entered the Klamath River, there would be no cumulative effect on water temperature from the Proposed Project and wildfires since the SSCs would have resumed natural background levels.

#### Significance

*Cumulatively considerable* in the short term

*No significant cumulative impact* in the long term

#### **Potential Cumulative Impact 3.24-5 Long-term water quality effects of the Proposed Project in combination with cannabis cultivation projects.**

Cannabis cultivation related projects within the water quality Area of Analysis and the Klamath Basin were assessed to determine if there would be a cumulative effect with the Proposed Project. Cannabis cultivation projects could potentially impact multiple water quality parameters, including water temperature as flow diversions for cultivation reduce stream flows and result in more rapid warming and higher water temperatures; suspended sediment from stormwater runoff of cultivated land; nutrients from stormwater runoff containing fertilizers; chlorophyll-a and algal toxins due to nutrients in stormwater runoff promoting additional phytoplankton or periphyton growth; and inorganic and organic contaminants from pesticide application. While there are potential water quality impacts from cannabis cultivation, many of those projects are part of the environmental setting (i.e., they existed at the time of issuance of the Notice of Preparation [2016]) and numerous regulatory agencies manage the water quality impacts from cannabis cultivation. Water quality impacts from these previously existing projects are represented in the water quality environmental setting (see Section 3.2.2 [*Water Quality Environmental Setting*] for more details) even though the existing projects are only now being permitted due to the recent legalization of cannabis cultivation. Additionally, the North Coast Regional Water Quality Control Board Cannabis Cultivation Waste Discharge Regulatory Program (North Coast Regional Board 2018b), the California Department of Food and Agriculture CalCannabis Cultivation Licensing, the California Department of Pesticide Regulation, and other agencies are regulating cannabis cultivation, including water quality and waste discharge requirements. New or existing permitted cannabis cultivation projects would be required to adhere to water quality regulations and implement project-specific measures to minimize or reduce to less than significant potential impacts to water quality. Project-specific measures detailed for several existing cannabis cultivation projects include relocating cultivation away from a stream, limiting the timing of diversions from streams, replacing unpermitted wells with permitted wells, and using drip irrigation systems to minimize water use. As such,



cannabis cultivation projects would be expected to have a less than significant impact on water quality in the Area of Analysis.

Depending on the reach of the Klamath River and the time scale (short-term or long-term) being analyzed, the Proposed Project would have a beneficial effect, no significant impact, or no significant impact with mitigation for the water quality parameters evaluated, including water temperature (Potential Impacts 3.2-1 and 3.2-2), suspended sediment (Potential Impacts 3.2-3 through 3.2-6), nutrients (Potential Impacts 3.2-7 and 3.2-8), chlorophyll-a and algal toxins (Potential Impact 3.2-12), and inorganic and organic contaminants (Potential Impacts 3.2-13 through 3.2-16). However, the short-term increases in suspended sediment as reservoirs sediments trapped behind the Lower Klamath Project dams are released (Potential Impact 3.2-3), would be significant and unavoidable. Since cannabis cultivation would be required to adhere to these regulations and implement project-specific measures to minimize or reduce to less than significant potential water quality impacts, the combined effect of the Proposed Project and cannabis cultivation projects not result in further impacts to water quality. Thus, there would be no significant cumulative water quality impact due to the Proposed Project.

#### Significance

##### *No significant cumulative impact*

#### **Potential Cumulative Impact 3.24-6 Long-term water quality effects of the Proposed Project in combination with grazing and other agricultural projects.**

Grazing and other agricultural projects may increase suspended sediment within streams due to soil disturbance and increased erosion; may increase nutrients in streams due to stormwater runoff from grazing or agricultural areas containing either livestock waste (grazing) or fertilizers (agriculture); may decrease dissolved oxygen due to the biological oxygen demand from stormwater runoff containing livestock waste (grazing) or fertilizers (agriculture); and may increase chlorophyll-a and algal toxins due to nutrients in stormwater runoff promoting additional phytoplankton or periphyton growth.

Any existing grazing or agricultural impacts on the Area of Analysis are accounted for in the analysis of the existing conditions. Most of the anticipated grazing and agricultural projects would not have the potential to impact water quality conditions in the water quality Area of Analysis because they would not occur within or upstream of the water quality Area of Analysis, including within tributaries of the Klamath River in California, where sediment, nutrients, and biological oxygen demand in runoff from grazing or agricultural lands could potentially influence water quality conditions within the water quality Area of Analysis (Table 3.24-1). Reasonably foreseeable grazing or agricultural projects located downstream of the Project Boundary in California, but still near the water quality Area of Analysis, are included in Table 3.24-1.

Grazing and agricultural projects would incorporate project-specific measures to reduce potential water quality impacts, including storm water management, streambank setbacks, or exclusionary livestock fencing. Grazing (and other agricultural projects) are required to meet the requirements of the non-point source discharge policy, the prohibition against unpermitted discharges, and the North Coast Regional Water Quality Control Board's Agricultural Lands Discharge Program. These require compliance with best management practices designed to meet state water quality requirements. (North

Coast Regional Board 2018a). Grazing and agricultural projects implementing such project-specific measures would be expected to have a less than significant impact on water quality in the Area of Analysis. Assuming grazing and agricultural projects implement project-specific measures to reduce water quality impacts, the combined effect of the Proposed Project and grazing and agricultural projects would not result in further impacts to water quality and there would be no significant cumulative water quality impact due to the Proposed Project and these grazing and agricultural projects.

#### Significance

*No significant cumulative impact*

#### **Potential Cumulative Impact 3.24-7 Long-term water quality effects of the Proposed Project in combination with mining projects.**

Mining projects within the water quality Area of Analysis and the Klamath Basin were evaluated to determine if there would be a cumulative effect with the Proposed Project. Mining projects may impact multiple water quality parameters, including increasing suspended sediment and inorganic or organic contaminants. Most of the anticipated mining projects are not within the water quality Area of Analysis or the vicinity of the mainstem Klamath River (Table 3.24-1) and they would be unlikely to impact water quality conditions within the Area of Analysis. Projects in the vicinity of the water quality Area of Analysis include the Brooks Mine, an existing mine located approximately five miles south of the Klamath River, near Humbug Creek, California. Any existing mining operations impacts on the Area of Analysis are accounted for in the analysis of the existing conditions. While there are potential water quality impacts from mining, these projects would be required to adhere to local, state, and/or federal mining regulations to protect water quality and implement project-specific measures to manage and reduce potential water quality impacts. Storm water management, waste discharge permits, and monitoring would all likely be necessary for any mining projects adjacent to water ways. As mining projects are required to implement such measures to reduce water quality impacts, the combined effect of the Proposed Project and mining would not result in further impacts to water quality. As such, there would be no significant cumulative water quality impact due the Proposed Project and mining projects.

#### Significance

*No significant cumulative impact*

#### **Potential Cumulative Impact 3.24-8 Long-term water quality effects of the Proposed Project in combination with stream-crossing infrastructure projects.**

The potential cumulative effects of the Proposed Project and infrastructure projects with stream crossings on water quality were evaluated. Most of the anticipated infrastructure projects with stream crossings projects are not within the water quality Area of Analysis or the vicinity of the mainstem Klamath River (Table 3.24-1) and they would be unlikely to impact water quality conditions within the Area of Analysis. One infrastructure project with a proposed crossing of the Klamath River occurs outside of the Area of Analysis, but it is potentially significant enough to merit consideration for potential water quality impacts in the Klamath River that may flow into the Area of Analysis in California. In Oregon, the Jordan Cove Energy Project/Pacific Connector Gas Pipeline is proposed to cross the Klamath River near Klamath Falls. As it has been proposed, the pipeline would cross the Klamath River by drilling through the bedrock beneath the river.

The construction and operation of the pipeline potentially could impact water quality in the Klamath River, with potential impacts to suspended sediment and inorganic and organic contaminants, especially during construction. The time of construction is highly uncertain based on the project history; it would be speculative to assume that construction-related water quality impacts from the pipeline project would occur during the periods when short-term Proposed Project water quality impacts would occur. However, construction-related impacts that would potentially impact suspended sediment or inorganic and organic contaminants likely would be mitigated to less than significant by implementing BMPs. Additionally, the Project would be required to adhere to local, state, and/or federal regulations to protect water quality, including a Clean Water Act Section 401 Water Quality Certification from the Oregon Department of Environmental Quality that would minimize and mitigate potential long-term water quality impacts. Thus, there would be no significant cumulative water quality impacts due to the combined effect of the Proposed Project and the pipeline project.

### Significance

*No significant cumulative impact*

### **Potential Cumulative Impact 3.24-9 Short-term water quality effects of the Proposed Project in combination with KHSA Interim Measure 16 Water Diversion Project.**

Under the KHSA Interim Measure 16 (IM 16), PacifiCorp would seek to eliminate three screened diversions (the Lower Shovel Creek Diversion [7.5 cfs], Upper Shovel Creek Diversion [2.5 cfs], and Negro Creek Diversion [5 cfs]) from Shovel and Negro creeks and would seek to modify its water rights to move the points of diversion from Shovel and Negro creeks to the mainstem Klamath River (Table 2.7-17). The screened diversions would be removed prior to dam removal. The intent of this measure is to increase flows in Shovel and Negro creeks and to increase the quality and amount of suitable habitat for aquatic species within these tributaries without diminishing PacifiCorp's water rights. The potential for sediments to enter the water during screen removal activities is minimal if the diversions are individual pump intakes. If the diversions are larger, concrete structures, the impacts would have a greater magnitude and a longer duration, but the impacts would still be short-term and due to construction/deconstruction activities. Impacts to water quality from suspended material would be minimized or eliminated through the implementation of BMPs for construction activities stipulated during permitting of IM 16. Additionally, IM 16 would be undertaken prior to dam removal, so any disturbed sediments would be trapped by Copco No. 1 Reservoir and not transferred downstream to the Klamath River prior to dam removal. The diversions would not be likely to affect other aspects of short-term or long-term water quality in the mainstem Klamath River since the water rights are relatively small (7.5 cfs, 2.5 cfs, and 5 cfs) compared to seasonal low flows in the mainstem upstream of Copco No. 1 Reservoir (typically greater than 800 cfs). The combined effect of the Proposed Project and IM16 would not result in further impacts to water quality. As such, there would be no significant cumulative water quality impact due the Proposed Project and IM 16.

### Significance

*No significant cumulative impact*

### 3.24.3 Aquatic Resources

The geographic scope for cumulative aquatic resource effects is the same as the Area of Analysis for aquatic resources, as described in detail in Section 3.3.1 *[Aquatic Resources] Area of Analysis*. The geographic scope extends across five study reaches of the Klamath River including the Upper Klamath River and Connected Waterbodies, the Hydroelectric Reach in the Upper Klamath Basin, the Middle Klamath River from Iron Gate Dam to the confluence with the Trinity River, the Lower Klamath River, the Klamath River Estuary, and the Pacific Ocean nearshore environment (Figure 3.3-1).

Existing conditions for aquatic resources in the Area of Analysis are described in Section 3.3.2 *[Aquatic Resources] Environmental Setting*. The aquatic species (Section 3.3.2.1 *Aquatic Species*); physical habitat in the waterbodies (Section 3.3.2.2 *Physical Habitat Descriptions*); and important factors affecting aquatic resources that the Proposed Project would influence (Section 3.3.2.3 *Habitat Attributes Expected to be Affected by the Proposed Project*), are also detailed. Section 3.3.2 *[Aquatic Resources] Environmental Setting* includes consideration of major past or ongoing projects that have impacted, or currently impact, aquatic resources.

This cumulative impact analysis focuses on the potential impacts of the Proposed Project combined with other closely related projects that are not already considered in the analysis of aquatic resource area effects (Section 3.3). The non-project activity types evaluated for potential cumulative impacts on aquatic resources shown below are those that would be likely to result in aquatic habitat alteration, changes in surface flows, and changes in water quality (water temperature, suspended sediment). While wildfire is a natural occurrence, under climate change more frequent and intense wildfires are reasonably foreseeable (Bedsworth et al. 2018) and thus wildfires are also evaluated for potential cumulative impacts on aquatic resources. The non-project activity types (plus wildfires) are included in Table 3.24-1.

Significance criteria for cumulative aquatic resources impacts are the same as defined in Section 3.3.3 *[Aquatic Resources] Significance Criteria*.

**Potential Cumulative Impact 3.24-10 Long-term effects on aquatic resources from the Proposed Project in combination with restoration, flow enhancement, and water quality improvement projects.**

As described in Section 3.3.5 *[Aquatic Resources] Potential Impacts and Mitigation*, the Proposed Project would increase habitat quantity and quality for aquatic resources. Other aquatic habitat restoration, flow enhancement, and water quality improvement projects along the Klamath River and its tributaries (creeks and rivers) are also anticipated to directly improve conditions for aquatic species (especially for juvenile salmonids rearing during winter), through the placement of off-channel habitat features, floodplain restoration, incorporation of large wood into tributaries to the Klamath River, increases in stream flow, and improved water quality (Table 3.24-1), thus having a beneficial effect. For example, the proposed relocation of water diversions from Shovel and Negro creeks to the mainstem Klamath River would increase the quality and amount of suitable habitat for aquatic species within these tributaries. Additionally, USBR's annual restoration funding of approximately \$500,000 provided as part of its Klamath Irrigation Project operations benefits coho salmon through habitat improvements. Restoration funding is described in the 2013 BiOp and is focused on activities that provide benefits to SONCC coho salmon and those aspects of their designated critical

habitat in the Klamath Basin that are most likely to be affected by Klamath Irrigation Project operations. Since 2013 many coho salmon fish passage and habitat restoration projects have been funded and implemented in the Mid- and Lower Klamath River. The Proposed Project, in combination with restoration, flow enhancement, and water quality improvement projects, would result in beneficial cumulative effects on aquatic resources.

### Significance

#### *Beneficial cumulative effects*

**Potential Cumulative Impact 3.24-11 Short-term increases in suspended sediments on aquatic resources under the Proposed Project in combination with 2017 court-ordered flushing and emergency dilution flows.**

As discussed in Potential Cumulative Impact 3.24-2, the short-term combined impact of the Proposed Project and the 2017 court-ordered flow requirements (i.e., 2013 BiOp plus the court ordered flushing and emergency dilutions flows) would result in a cumulative increase in the suspended sediment concentrations during water years when reservoir drawdown flows are less than the surface and/or deep flushing flows. The 2017 court-ordered flushing flows are released from Iron Gate Dam for the purpose of disrupting the nidus downstream of Iron Gate Dam and reducing disease risk. High concentrations of suspended sediment and bedload sediment released during dam removal year 2 is anticipated to effectively scour and disrupt the periphyton intermediate host of the key fish diseases, and thus flushing flows and emergency dilution flows are highly unlikely to be required during the same period of impacts from the Proposed Project. In addition, the incremental effect of the increased suspended sediment on aquatic resources would be dwarfed by the substantial sediment volumes of sediment predicted to occur (described in detail in Appendix E). Therefore, the impacts predicted for aquatic resources under the Proposed Project (described in Section 3.3.5.9 *Aquatic Resource Impacts*) are no lesser, nor higher, when considered cumulatively with the 2017 court-ordered flushing and emergency dilution flows.

### Significance

#### *No significant cumulative impact in the short term*

**Potential Cumulative Impact 3.24-12 Long-term effects on aquatic resources from the Proposed Project in combination with forest and wildfire management activities.**

The cumulative effect of the Proposed Project and the multiple forest and wildfire management projects within the aquatic resources Area of Analysis was evaluated. The forest and wildfire management project activities include commercial and non-commercial thinning in stands for forest health and fuel reduction, using prescribed fire, creating strategic fuel breaks, implementing fuel treatments including under-burning and pile burning, revegetating areas to accelerate the development of mature forest, enhancing meadow conditions, improving water temperature and sediment conditions in streams, modifying road conditions, and increasing recreational opportunities. The main water quality parameters related to aquatic resources (see Section 3.3.2.3 *Habitat Attributes Expected to be Affected by the Proposed Project*) that would be potentially adversely impacted by these activities would be water temperature as vegetation removal allows more solar radiation to reach streams and the surrounding floodplain surfaces, and suspended sediment due to vegetation removal, prescribed burns, fuel treatments, and road construction and usage increasing erosion. The North Coast Regional Water Quality Control Board's Forest Activities Program issues waste

discharge requirements and general waivers with terms and conditions to address the potential water quality problems potentially associated with a range of forest management activities on private and on USDA Forest Service lands. Forest and wildfire management projects within or near the aquatic resources Area of Analysis are included in Table 3.24-1.

The cumulative effect of the Proposed Project and forest and wildfire management activities would not have a significant impact on aquatic resources, since the cumulative magnitude of changes to water quality factors affecting aquatic habitat would not be anticipated to exceed the aquatic resource significance criteria. There would be no significant cumulative impact from drawdown of the Lower Klamath Project reservoirs and wildfire management activities, because drawdown would occur during November through March when forest and wildfire management activities (e.g., prescribed burns or commercial logging) would be limited. While some forest and wildfire management activities would potentially increase water temperature and suspended sediment in streams due to removal of vegetation cover and temporary or permanent road construction and usage for tree removal (i.e., logging), other activities would potentially improve long-term water quality and aquatic habitat conditions by revegetating areas, enhancing riparian cover along meadow streams, and decommissioning or downgrading roads to reduce suspended sediment delivery to streams. As a result, the net cumulative impact from the anticipated forest and wildfire management activities would be less than significant and there would not be a significant cumulative impact from the Proposed Project and forest and wildfire management activities.

### Significance

*No significant cumulative impact in the long term*

#### **Potential Cumulative Impact 3.24-13 Short-term and long-term effects on aquatic resources from the Proposed Project in combination with wildfires.**

Wildfires also could potentially impact aquatic habitat through wildfire-related impacts to water temperature and increased suspended sediments (SSCs). In the short term and long term, the Proposed Project would decrease Klamath River water temperatures in the Hydroelectric Reach and Middle Klamath River from Iron Gate Dam to the confluence with the Salmon River during the late summer/fall compared with existing conditions (Potential Impact 3.2-1), which would help to offset potential increases in water temperatures in wildfire burn areas, should they occur within these reaches in the water quality Area of Analysis. This would generally be a benefit to aquatic resources. The Proposed Project would have no effect on water temperatures for the Middle Klamath River downstream from the Salmon River, the Lower Klamath River, and the Klamath River Estuary in the short term or the long term, thus there would be no cumulative impact on water temperature for the Proposed Project combined with wildfires.

As discussed in Potential Cumulative Impact 3.24-4, there would be a cumulatively considerable short-term impact of the Proposed Project on water quality due to increased SSCs during reservoir drawdown because the Proposed Project exceeds water quality significance criteria for SSCs, and because of the potential for an extended duration of elevated SSCs in the Hydroelectric Reach, the Middle and Lower Klamath River, and the Klamath River Estuary. However, short-term elevated SSCs during reservoir drawdown under the Proposed Project would result in no significant impact with mitigation for coho salmon critical habitat (Potential Impact 3.3-1), no significant short-

term impact with mitigation for Chinook and coho salmon essential fish habitat (EFH) (Potential Impact 3.3-4), and no significant population impacts for multiple fish species within the Hydroelectric Reach, the Middle and Lower Klamath River, and the Klamath River Estuary (Potential Impacts 3.3-5 through 3.3-14). Further, the short-term cumulative increase in SSCs from a late-season (e.g., November) wildfire during dam removal year 1 or 2 that burns the landscape near or within the aquatic resources Area of Analysis and is followed by heavy rainstorms, would not be likely to increase the magnitude of SSCs outside the range modeled for the Proposed Project (see Potential Cumulative Impact 3.24-4) such that there would be no significant cumulative impact of the Proposed Project on aquatic resources in combination wildfires.

### Significance

#### *No significant cumulative impact*

#### **Potential Cumulative Impact 3.24-14 Long-term effects on aquatic resources from the Proposed Project in combination with cannabis cultivation projects.**

Cannabis-cultivation-related projects within the aquatic resources Area of Analysis and the Klamath Basin were assessed to determine if there would be a cumulative effect with the Proposed Project. Increased cannabis cultivation could potentially impact multiple water quality parameters that effect aquatic resources, including water temperature as flow diversions for cultivation reduce stream flows and result in more rapid warming and higher water temperatures; suspended sediment from stormwater runoff of cultivated land; and nutrients from stormwater runoff containing fertilizers. While there are potential water quality and thus aquatic resource impacts from cannabis cultivation, many of those projects are part of existing conditions and numerous regulatory agencies manage the impacts from cannabis cultivation. Additionally, the North Coast Regional Water Quality Control Board Cannabis Cultivation Waste Discharge Regulatory Program, the California Department of Food and Agriculture Cannabis Cultivation Licensing, the California Department of Pesticide Regulation, and other agencies are regulating cannabis cultivation, including water quality and waste discharge requirements. New or existing permitted cannabis cultivation projects would be required to adhere to water quality regulations and implement project-specific measures to reduce potential impacts to water quality (and thus aquatic resources). Project-specific measures detailed for several existing cannabis cultivation projects include relocating cultivation away from a stream, limiting the timing of diversions from streams, replacing unpermitted wells with permitted wells, and using drip irrigation systems to minimize water use: these changes are aimed at improving water quality over the existing condition. The potential impacts of new permitted cannabis cultivation projects would be addressed through the regulatory program, as well. As such, these changes in cannabis cultivation practices would have a less than significant impact on aquatic resources and the combination of the Proposed Project and these cannabis projects would not result in a significant cumulative impact to aquatic resources.

### Significance

#### *No significant cumulative impact*

#### **Potential Cumulative Impact 3.24-15 Long-term effects on aquatic resources from the Proposed Project in combination with grazing projects and agriculture projects.**

Grazing and agricultural projects may impact aquatic resources through an increase in suspended sediment within streams due to soil disturbance and increased erosion; an

increase in nutrients in streams due to stormwater runoff from grazing areas containing livestock waste; and an decrease dissolved oxygen due to the biological oxygen demand from stormwater runoff containing livestock waste. Any existing grazing impacts on the Area of Analysis are accounted for the analysis of the existing condition. Additionally, most of the anticipated grazing and agricultural projects would not have the potential to impact water quality conditions in the aquatic resources Area of Analysis because they would not occur within or upstream of the Area of Analysis, including within tributaries of the Klamath River in California, where sediment, nutrients, and biological oxygen demand in runoff from grazing or agricultural lands could potentially influence water quality conditions within the Area of Analysis. Grazing projects located downstream of the Project Boundary in California, but still near the Area of Analysis, are included in Table 3.24-1.

Grazing projects would incorporate project-specific measures to reduce potential water quality impacts (and thus aquatic resource impacts), including storm water management, streambank setbacks, or exclusionary livestock fencing. Grazing (and other agricultural projects) are required to meet the requirements of the non-point source discharge policy, the prohibition against unpermitted discharges, and the North Coast Regional Water Quality Control Board's Agricultural Lands Discharge Program. These require compliance with best management practices designed to meet state water quality requirements. Grazing projects implementing such project-specific measures would have a less than significant impact on aquatic resources and the Proposed Project and these grazing projects would not result in a significant cumulative impact to aquatic resources.

#### Significance

*No significant cumulative impact*

#### 3.24.4 Phytoplankton and Periphyton

The geographic scope for cumulative phytoplankton and periphyton effects is the same as the Area of Analysis for phytoplankton and periphyton, as described in detail in Section 3.4.1 [*Phytoplankton and Periphyton*] *Area of Analysis*. The geographic scope includes the Klamath River from the Hydroelectric Reach in the Upper Klamath Basin through the Lower Klamath River to its confluence with the Trinity River, the Klamath River Estuary, and the Pacific Ocean nearshore environment (Figure 3.4-1). The Upper Klamath River upstream of the Oregon-California state line (RM 214.1) is only considered to the extent that conditions in this reach influence phytoplankton and periphyton communities downstream in California.

Existing conditions for phytoplankton and periphyton in the Area of Analysis are described in Section 3.4.2 [*Phytoplankton and Periphyton*] *Environmental Setting*. Spatial and temporal trends in phytoplankton and periphyton conditions for the Klamath River from the Hydroelectric Reach through the Klamath River Estuary and the Pacific Ocean nearshore environment are detailed for the Area of Analysis. Phytoplankton, including blue-green algae, grow best in slow-moving, stable water conditions, so they compose the majority of the algal community in the reservoirs and occasionally occur in slow-moving water portions (e.g., backwater eddies and near shore shallows) of the mainstem Klamath River. Blue-green algae growth varies seasonally in the Hydroelectric Reach, reaching nuisance levels in the Copco No. 1 and Iron Gate reservoirs primarily during summer and fall months. In the Klamath River downstream of



the Hydroelectric Reach, blue-green algae are less abundant due to limited slow-moving water habitat, but nuisance levels of blue-green algae occasionally occur when blue-green algae cells from the reservoirs drift downstream and habitat conditions in the mainstem river favor blue-green algae growth. Periphyton, including diatoms, green algae, fungi, and bacteria, primarily grow attached to the streambed and/or other underwater surfaces, so they grow best in the river reaches of the Klamath River. While periphyton are not abundant in the Hydroelectric Reach due to limited suitable habitat, periphyton dominate the algal community in the Middle and Lower Klamath River. Spatial and seasonal variations in periphyton correspond to changes in nutrients concentrations and flow conditions. Section 3.4.2 [*Phytoplankton and Periphyton Resources*] *Environmental Setting* includes consideration of major past or ongoing projects that have impacted, or currently impact, phytoplankton and periphyton resources.

This cumulative impact analysis focuses on the potential impacts of the Proposed Project combined with other closely related projects that are not already considered in the analysis of phytoplankton and periphyton resource area effects (Section 3.4 *Phytoplankton and Periphyton*). The non-project activity types evaluated for cumulative impacts on phytoplankton and periphyton shown below are those that would potentially alter the water temperature, hydrodynamic (water movement), and nutrient availability conditions in the Klamath River within the Area of Analysis. Changes in these variables due to the cumulative impact of the Proposed Project and other closely related projects could potentially increase the extent of optimal habitat for phytoplankton or periphyton in the Area of Analysis, contributing to additional impairment of designated beneficial uses. While wildfire is a natural occurrence, under climate change more frequent and intense wildfires are reasonably foreseeable (Bedsworth et al. 2018) and thus wildfires are also evaluated for potential cumulative impacts on phytoplankton and periphyton. The non-project activity types (plus wildfires) are included in Table 3.24-1.

Significance criteria for cumulative phytoplankton and periphyton impacts are the same as those defined in Section 3.4.3 [*Phytoplankton and Periphyton*] *Significance Criteria*.

**Potential Cumulative Impact 3.24-16 Long-term phytoplankton and periphyton effects from the Proposed Project in combination with habitat restoration, flow enhancement, and water quality improvement projects.**

Habitat restoration, flow enhancement, and water quality improvement projects along the Klamath River and its tributary creeks and rivers would alter phytoplankton and periphyton growth and habitat conditions by modifying the hydrodynamic and nutrient availability conditions in the Area of Analysis. Stream channel improvements, riparian habitat restoration, placement of off-channel habitat features, floodplain restoration, incorporation of large wood into tributaries to the Klamath River, and increases in stream flow in the Klamath River would all influence local phytoplankton and periphyton conditions where the restoration occurs, but these activities may have limited influence on phytoplankton and periphyton within the Area of Analysis if they occur outside of the Area of Analysis.

Habitat restoration, flow enhancement, and water quality improvement projects likely would have a beneficial effect on local phytoplankton and periphyton conditions by increasing turbulent mixing and reducing nutrient concentrations, but the creation of off-channel features may produce low mixing conditions and slow water habitat under some flow conditions, potentially leading to localized phytoplankton growth in backwater areas.

The Proposed Project conversion of reservoir areas to free-flowing river reaches would have a beneficial effect on phytoplankton conditions in the Klamath River from the Hydroelectric Reach to the Klamath River Estuary because it would eliminate slow-moving habitat that promotes nuisance and/or noxious blue-green algae blooms that are transported throughout these reaches of the Klamath River (Potential Impact 3.4-1). However, the conversion of reservoir areas to free-flowing river reaches would result in a significant and unavoidable impact on periphyton conditions because the newly created free-flowing river reaches would provide additional low-gradient habitat suitable for periphyton growth. The extent, duration, or biomass of nuisance periphyton may increase within these newly created free-flowing river reaches. Short-term and long-term nutrient increases from the release of sediment-associated nutrients or the lack of interception of nutrients behind the Lower Klamath Project dams due to the Proposed Project would be less than significant for phytoplankton and periphyton growth and habitat conditions, so they would have no significant impact on phytoplankton or periphyton (and Potential Impacts 3.4-1, 3.4-3, and 3.4-5).

As the Proposed Project would not have a significant adverse impact on phytoplankton related to restoration and flow enhancements and there are no closely related projects that would, in combination with the Proposed Project, have a significant and adverse impact, there would be no cumulative phytoplankton impacts due to the Proposed Project and habitat restoration, flow enhancement, and water quality improvement projects.

Although the Proposed Project would result in significant and unavoidable adverse impacts due to periphyton increases in the newly created free-flowing river reaches (see Potential Impact 3.4-4), there are no closely related anticipated activities associated with habitat restoration, flow enhancement, and water quality improvement projects that would, in combination with the Proposed Project, result in further significant and adverse periphyton impacts. Thus, there would be no cumulative periphyton impacts due to the Proposed Project and habitat restoration, flow enhancement, and water quality improvement projects.

### Significance

*No significant cumulative impact*

#### **Potential Cumulative Impact 3.24-17 Short-term and long-term phytoplankton and periphyton effects from the Proposed Project in combination with 2017 court-ordered flushing and emergency dilution flows.**

Formal consultation was reinitiated in 2017 on the NMFS and USFWS 2013 Joint Biological Opinion. Until formal consultation is completed and a new biological opinion (BiOp) issued, USBR is required to continue adhering to the 2013 BiOp Flow requirements while also releasing additional winter-spring surface and deep flushing flows and potentially emergency dilution flows (U.S. District Court 2017). New BiOp Flows would alter the hydrodynamic (i.e., flow) conditions in the Klamath River within the phytoplankton and periphyton Area of Analysis. The potential new BiOp flow requirements under the Proposed Project are speculative since the fish disease conditions that prompted the flushing and emergency dilution flow requirements would be reduced due to increased dispersal of spawners and carcasses, transport of bedload, and establishment of variable flows, even if infection itself is not eliminated (see Section 3.3.5.5 *Fish Disease and Parasites*). Further, if flushing and emergency dilution flow

requirements were to continue under a new BiOp, it is not clear if the prior location of Iron Gate Dam would remain as the compliance point. Thus, this cumulative effects analysis analyzes only the 2017 flow requirements (i.e., 2013 BiOp Flows plus the 2017 court-ordered flushing and emergency dilution flows), which although not part of the existing conditions (2016), are considered to be a reasonably foreseeable flow condition until formal consultation is completed and a new BiOp is issued (see Potential Cumulative Impact 3.24-2 for more details).

The Proposed Project and 2017 flow requirements would decrease favorable growth conditions and optimum habitat availability for phytoplankton or periphyton since they are designed to limit periphyton establishment along the streambed, which also limits favorable habitat for the polychaete worm that hosts fish parasites (e.g., *C. shasta*) (see Section 3.3.5.5 *Fish Disease and Parasites*). Additionally, an increase in the frequency of higher flushing flows and emergency dilution flows between November and June would increase turbulent flows in the Klamath River, reducing the extent of slow-water habitat that favors phytoplankton growth. The Proposed Project would eliminate slow-water habitat in the reservoir areas and convert those areas into more turbulent free-flowing reaches that would not support extensive phytoplankton blooms, including blue-green algae blooms (Potential Impact 3.4-2). As such, the cumulative effect of the Proposed Project combined with an increase the frequency of flushing flows and emergency dilution flows would result in a beneficial effect by further reducing the availability of slow-water habitat that supports nuisance and/or noxious phytoplankton blooms.

The increase in the frequency of higher flushing flows and emergency dilution flows between November and June under the 2017 flow requirements would also increase sediment movement and streambed scour in the Klamath River, reducing conditions where periphyton could establish along the streambed when flushing flows or emergency dilution flows are occurring. As discussed in Section 3.4.5.2 *Periphyton*, the Proposed Project drawdown flows would mobilize streambed sediments and scour periphyton attached to the streambed, especially at higher flows that move larger sediments like cobbles (Potential Impact 3.4-3). Although the Proposed Project would result in an increase in periphyton and a potentially significant and unavoidable short-term and long-term increase in nuisance periphyton along the Hydroelectric Reach due to the conversion of the reservoir areas to a free-flowing river and elimination of hydropower peaking operations, the cumulative effect of increase in the frequency of higher flushing flows and emergency dilution flows would be beneficial and reduce the extent, duration, and biomass of nuisance periphyton.

Overall, the combined effect from the Proposed Project and the 2017 flow requirements would reduce the spatial extent, temporal duration, toxicity, or concentration of nuisance and/or noxious phytoplankton blooms and the spatial extent, temporal duration, or biomass of nuisance periphyton. The combined effect from the Proposed Project and the 2017 flow requirements would potentially have a short-term and long-term beneficial effect in the Hydroelectric Reach and the Middle Klamath River by increasing streambed scour and reducing or eliminating the growth and establishment of nuisance periphyton growth during higher November through June flow conditions.

As the Proposed Project would not have a significant adverse impact on phytoplankton (Potential Impacts 3.4-1 and 3.4-2) and the flushing flows and emergency dilution flows in the 2017 flow requirements would increase turbulent flows in the Klamath River and

reduce the extent of slow-water habitat that favors phytoplankton growth, there would be beneficial cumulative effects on phytoplankton due to the combined effects of the Proposed Project and the 2017 flow requirements.

Although the Proposed Project would result in significant and unavoidable adverse impacts due to periphyton increases, there are no closely related anticipated activities associated with the 2017 flow requirements that would, in combination with the Proposed Project, result in further significant and adverse periphyton impacts. Thus, there would be no significant cumulative periphyton impacts due to the Proposed Project associated with the 2017 flow requirements.

### Significance

*Beneficial cumulative effects for phytoplankton*

*No significant cumulative impact for periphyton*

### **Potential Cumulative Impact 3.24-18 Short-term and long-term phytoplankton and periphyton effects from the Proposed Project in combination with forest and wildfire management projects.**

In the phytoplankton and periphyton Area of Analysis, anticipated forest and wildfire management projects would involve thinning in stands for forest health and fuel reduction, using prescribed fire, creating strategic fuel breaks, implementing fuel treatments including under-burning and pile burning, revegetating areas to accelerate the development of mature forest, enhancing meadow conditions, improving water temperature and sediment conditions in streams, modifying road conditions, and increasing recreational opportunities. Vegetation removal or enhancement near streams would potentially affect phytoplankton and periphyton, since the activities would potentially alter the solar radiation and water temperature in the streams. Additional solar radiation from vegetation removal would potentially enable more phytoplankton or periphyton photosynthesis and growth. Higher water temperatures may potentially increase phytoplankton or periphyton growth and/or production of blue-green algae toxins, if the duration that water temperatures are within growth or toxin production optimum temperatures increases. Forest and wildfire management projects may also alter suspended sediment conditions in streams due to vegetation modifications (e.g., removal or enhancement), prescribed burns, fuel treatments, and road construction and usage increasing erosion. Reductions in suspended sediment would increase light availability in the stream, especially at the streambed, potentially increasing phytoplankton or periphyton photosynthesis and growth. While phytoplankton and periphyton are not directly addressed by the North Coast Regional Water Quality Control Board's Forest Activities Program, the program issues waste discharge requirements and general waivers with terms and conditions to address the potential water quality problems (e.g., water temperature or suspended sediment increases) potentially associated with a range of forest management activities on private and on USDA Forest Service lands (North Coast Regional Board 2018c).

Reasonably foreseeable forest and wildfire management projects within or near the water quality Area of Analysis are included in Table 3.24-1. The Proposed Project and forest and wildfire management activities would result in no significant cumulative impact on phytoplankton and periphyton because the cumulative magnitude of changes to solar radiation, water temperature, or suspended sediment would not be anticipated to alter phytoplankton and periphyton growth conditions in the Area of Analysis. Most

anticipated forest and wildfire management activities are not located near the Area of Analysis, so potential overlap between the effects of the Proposed Project and forest and wildfire management activities is limited. Potential changes to solar radiation, water temperature, and/or suspended sediment from forest and wildfire management activities may alter local habitat and growth conditions for phytoplankton and periphyton, but they would be unlikely to alter habitat and growth conditions within the Area of Analysis. Additionally, Proposed Project impacts associated with drawdown (e.g., Potential Impact 3.4-1 and 3.4-3) would primarily occur during November through March when forest and wildfire management activities (e.g., prescribed burns or commercial logging) are less likely to occur. Forest and wildfire management activities would also have opposing effects on phytoplankton and periphyton growth, further limiting the cumulative effect of those near the Area of Analysis. Vegetation removal and temporary or permanent road construction and usage for tree removal (i.e., logging) would potentially increase phytoplankton and periphyton growth in the local vicinity of the project due to increases in solar radiation and water temperature or reductions in suspended sediment, but revegetating areas, enhancing riparian cover along meadow streams, and decommissioning or downgrading roads to reduce suspended sediment delivery to streams activities would potentially decrease phytoplankton and periphyton growth by reducing solar radiation and water temperature or increasing suspended sediment.

As the Proposed Project would not have a significant adverse impact on phytoplankton and periphyton related to forest and wildfire management and there are no closely related projects that would, in combination with the Proposed Project, have a significant and adverse impact, there would be no significant cumulative phytoplankton or periphyton impacts in the short term or long-term due to the Proposed Project associated with forest and wildfire management.

### Significance

#### *No significant cumulative impact*

**Potential Cumulative Impact 3.24-19 Short-term and long-term phytoplankton and periphyton effects of the Proposed Project in combination with potential wildfire.** Wildfires regularly occur within the Klamath Basin, with multiple large fires occurring in 2016 through 2018 (see also Table 3.24-1), and fires likely to occur in future years. Wildfires could potentially increase phytoplankton and periphyton growth by reducing the vegetation cover around streams, resulting in more solar radiation reaching the stream and warmer water temperatures. Phytoplankton and periphyton growth may also decrease due to wildfires as increases in suspended sediment from increased erosion in burn areas reduce light availability for growth. While there are potential phytoplankton and periphyton growth and habitat effects from wildfires, the magnitude of fires and their proximity to the phytoplankton and periphyton Area of Analysis would likely determine the cumulative impact of wildfires.

The Proposed Project would not have a significant short-term or long-term impact on phytoplankton (Potential Impacts 3.4-1 and 3.4-2), but it would have a long-term beneficial effect by reducing available habitat suitable for blue-green algae growth in the Hydroelectric Reach and transport of blue-green algae downstream of the Hydroelectric Reach. Wildfires may locally effect phytoplankton habitat in the phytoplankton and periphyton Area of Analysis if they occur immediately adjacent or upslope from the Klamath River, but these local effects would be unlikely to significantly alter the availability or suitability of phytoplankton habitat in the Klamath River. While a late-

season (e.g., November) wildfire that burns near or within the phytoplankton and periphyton Area of Analysis followed by heavy rain would result in a potential short-term cumulative increase in the SSCs (see Potential Cumulative Impact 3.24-4), this would occur during late-fall/winter conditions when phytoplankton growth is already naturally low due to less light availability and colder temperatures and there would be minimal change in phytoplankton growth due less vegetation along the river edge or an increase in SSC and turbidity. Thus, the overall effects of wildfire on phytoplankton habitat and growth would be limited and wildfires would be unlikely to produce an increase in the extent, duration, toxicity, or concentration of nuisance and/or noxious phytoplankton blooms, including blue-green algae, in the Area of Analysis that would combine with the Proposed Project effects to result in a significant and adverse impact on phytoplankton.

There were no significant short-term or long-term impacts in the Klamath River from the Proposed Project due to changes in nutrients (Potential Impact 3.4-3 and Potential Impact 3.4-5), since the increase in nutrients either occurred during periods when periphyton growth rates were low or nutrient increases were offset by other competing processes that would limit overall periphyton growth. However, the Proposed Project would result in significant and unavoidable adverse impacts for periphyton due to increases in available low-gradient channel margin habitat in the Hydroelectric Reach from conversion of the reservoir areas to free-flowing river (Potential Impact 3.4-4). Wildfires would not significantly alter nutrient conditions in the Klamath River or the availability of periphyton habitat in the Klamath River. As such, the combined effect of the Proposed Project and wildfires would be unlikely to produce an increase in the spatial extent, temporal duration, or biomass of nuisance periphyton in the Area of Analysis that would result in a significant and adverse impact.

As the Proposed Project would not have a significant adverse impact on phytoplankton and periphyton related to wildfire and there are no closely related projects that would, in combination with the Proposed Project, have a significant and adverse impact, there would be no significant cumulative phytoplankton or periphyton impacts in the short term or long-term due to the Proposed Project associated with wildfires.

### Significance

*No significant cumulative impact*

### **Potential Cumulative Impact 3.24-20 Short-term and long-term phytoplankton and periphyton effects from the Proposed Project in combination with potential cannabis cultivation.**

There are numerous anticipated cannabis cultivation projects within the Klamath Basin that could potentially affect phytoplankton and periphyton growth in the Klamath River. Flow diversions for cultivation reduce stream flows, result in more rapid warming and higher water temperatures, and increase light availability at the streambed for periphyton growth. Erosion of cultivated land potentially increases suspended sediment, reducing light availability in streams. Stormwater runoff containing fertilizer potentially increases nutrient loading in streams, promoting additional phytoplankton or periphyton growth.

While there are potential phytoplankton and periphyton impacts from cannabis cultivation, many cannabis cultivation projects are part of existing conditions and numerous regulatory agencies manage the water diversions and water quality effects of runoff from cannabis cultivation. New or existing permitted cannabis cultivation projects would be required to adhere to these regulations and implement project-specific

measures to minimize or reduce to less than significant potential water quality impacts that could alter phytoplankton and periphyton conditions in streams. Additionally, most of the cannabis cultivation projects listed in Table 3.24-1 include a specified location identified in permitting documents and are not located near the phytoplankton and periphyton Area of Analysis, so potential impacts from cannabis cultivation would be unlikely to significantly overlap with the Proposed Project impacts. Short-term and long-term nutrient increases from the release of sediment-associated nutrients or the lack of interception of nutrients behind the Lower Klamath Project dams due to the Proposed Project are expected to have no significant impact on phytoplankton or periphyton (Potential Impact 3.4-3 and Potential Impacts 3.4-1 and 3.4-5). As the Proposed Project would not have a significant adverse impact on phytoplankton and periphyton related to cannabis cultivation and there are no closely related projects that would, in combination with the Proposed Project, have a significant and adverse impact, there would be no significant cumulative phytoplankton or periphyton impacts in the short term or long-term due to the Proposed Project associated with cannabis cultivation.

### Significance

*No significant cumulative impact*

#### **Potential Cumulative Impact 3.24-21 Short-term and long-term phytoplankton and periphyton effects from the Proposed Project in combination with grazing and agricultural projects.**

Phytoplankton and periphyton growth and habitat conditions in the Klamath River could potentially be altered by grazing and agricultural projects because they would potentially increase the solar radiation and water temperature in the streams due to reductions in riparian vegetation (grazing); decrease light availability within streams due to increased suspended sediment from soil disturbance and increased erosion (grazing and agriculture); and increase nutrients in streams due to stormwater runoff from areas containing livestock waste (grazing) or fertilizers (agriculture). However, most of the anticipated grazing and agricultural projects would not have the potential to impact phytoplankton and periphyton conditions because they would not be within the phytoplankton and periphyton Area of Analysis or the vicinity of the mainstem Klamath River (Table 3.24-1). Reasonably foreseeable grazing and agricultural projects near the phytoplankton and periphyton Area of Analysis include Dry Lake and Horse Creek Grazing Allotment, Lake Mountain & Middle Tompkins Grazing Allotment, and Cannaworx Zone Change (see also Table 3.24-1).

Additionally, future public land grazing allotment environmental assessments and approvals along with any reviews and approvals required for agricultural projects would reasonably incorporate project-specific measures to reduce potential water quality impacts, including storm water management, streambank setbacks, or exclusionary livestock fencing. Grazing and agricultural projects are required to meet the requirements of the North Coast Regional Water Quality Control Board's Agricultural Lands Discharge Program, including a series of waivers of waste discharge requirements when applicants comply with best management practices designed to meet state water quality requirements, the State Nonpoint Source Policy, and the TMDLs in specific watersheds (North Coast Regional Board 2018a). These project-specific measures would reduce the potential effects to phytoplankton and periphyton growth and habitat conditions because the primary effects of grazing and agriculture on phytoplankton and periphyton growth are due to changes in the water quality (e.g., water temperature, suspended sediment, or nutrients). Grazing and agricultural projects

implementing such project-specific measures would reduce their impact on phytoplankton and periphyton growth. As discussed under Potential Impact 3.4-1, 3.4-3, and 3.4-5, the short-term and long-term nutrient increases from the release of sediment-associated nutrients or the lack of interception of nutrients behind the Lower Klamath Project dams due to the Proposed Project are less than significant for phytoplankton and periphyton growth and habitat conditions, so they would have no significant impact on phytoplankton or periphyton. As the Proposed Project would not have a significant adverse impact on phytoplankton and periphyton related to grazing and agricultural projects and there are no closely related projects that would, in combination with the Proposed Project, have a significant and adverse impact, there would be no significant cumulative phytoplankton or periphyton impacts in the short term or long-term due to the Proposed Project and grazing and agricultural projects.

### Significance

*No significant cumulative impact*

#### **Potential Cumulative Impact 3.24-22 Short-term and long-term phytoplankton and periphyton effects from the Proposed Project in combination with mining.**

Most of the anticipated mining projects are not within the phytoplankton and periphyton Area of Analysis or the vicinity of the mainstem Klamath River (Table 3.24-1), so they would not impact phytoplankton and periphyton conditions within the Area of Analysis. Projects in the vicinity of the phytoplankton and periphyton Area of Analysis include the Brooks Mine, an existing mine located approximately five miles south of the Klamath River, near Humbug Creek, California. Any existing mining operations impacts on the phytoplankton and periphyton Area of Analysis are accounted for in the analysis of the existing conditions. Mining could potentially alter light availability for phytoplankton and periphyton in the Klamath River by increasing suspended sediment conditions, but since mining projects would be required to adhere to local, state, and/or federal mining regulations to protect water quality and implement project-specific measures to manage and reduce potential water quality impacts, there would be no cumulative impact. Stormwater management, waste discharge permits, and monitoring would all likely be necessary for any mining projects adjacent or draining to waterways. Mining projects implementing such project-specific measures would reduce their impacts on phytoplankton and periphyton growth. There are no significant adverse phytoplankton or periphyton impacts due to suspended sediment concentrations under the Proposed Project (Potential Impact 3.4-4 and Potential Impacts 3.4-1, 3.4-2, 3.4-3, and 3.4-5). As the Proposed Project would not have a significant adverse impact on phytoplankton and periphyton related to mining cultivation and there are no closely related projects that would, in combination with the Proposed Project, have a significant and adverse impact, there would be no significant cumulative phytoplankton or periphyton impacts in the short term or long-term due to the Proposed Project and mining projects.

### Significance

*No significant cumulative impact*

#### **3.24.5 Terrestrial Resources**

The Primary Area of Analysis for terrestrial resources includes the area within the Limits of Work, a 0.25- to 1.0-mile buffer surrounding the Limits of Work, and a 0.25-mile buffer of the Klamath River from the California border to the Pacific Ocean (Figure 3.5-1).



Existing conditions for terrestrial resources are described in Section 3.5.2 [*Terrestrial Resources*] *Environmental Setting*. The Primary Area of Analysis for terrestrial resources includes diverse habitats, ranging from wetland surfaces just below sea level in the Klamath River Estuary (-0.16 feet elevation) to the slopes above the Upper Klamath River near the California-Oregon state line (3,428 feet elevation), and includes 19 different CWHR vegetation types. These vegetation types have the potential to support numerous special-status plant and wildlife species; species with the potential to occur in the Primary Area of Analysis for terrestrial resources are provided in Tables 3.5-4 and 3.5-5 and information about documented occurrences of special-status species within the Primary Area of Analysis for terrestrial resources are provided in Section 3.5.2 [*Terrestrial Resources*] *Environmental Setting*. Section 3.5.2 [*Terrestrial Resources*] *Environmental Setting* includes consideration of major past or ongoing projects that have impacted, or currently impact, terrestrial resources.

This cumulative impact analysis focuses on the potential impacts of the Proposed Project combined with other closely related projects that are not already considered in the analysis of terrestrial resource area effects (Section 3.5). Non-project activity types within the Primary Area of Analysis for terrestrial resources with the potential for significant cumulative impacts to terrestrial resources are those that may result in noise, ground disturbance, habitat alteration, and/or changes to water flows and water quality, and are included in Table 3.24-1.

Significance criteria for cumulative terrestrial resources impacts are the same as defined in Section 3.5.3 [*Terrestrial Resources*] *Significance Criteria*.

**Potential Cumulative Impact 3.24-23 Long-term effects on terrestrial resources from the Proposed Project in combination with restoration, flow enhancement, and water quality improvement projects.**

The Proposed Project includes restoration elements, as defined in the Reservoir Area Management Plan (Appendix B: *Definite Plan – Appendix H*), that would be beneficial to willow flycatcher (Potential Impact 3.5-12), rare natural communities, wetlands, and riparian vegetation (Potential Impact 3.5-24), as well as wildlife movement corridors (Potential Impact 3.5-29). The other reasonably foreseeable restoration, flow enhancement, and water quality improvement projects within or near the Primary Area of Analysis for terrestrial resources (Table 3.24-1) would also enhance terrestrial resources in the long term by restoring native vegetation and creating beneficial wildlife habitat (e.g., western pond turtle basking habitat, foothill yellow-legged frog breeding habitat) through activities such as the placement of off-channel habitat features, floodplain restoration, and incorporation of large wood into tributaries to the Klamath River. The Proposed Project, in combination with reasonably foreseeable restoration, flow enhancement, and water quality improvement projects, would result in beneficial cumulative effects on terrestrial resources.

### **Significance**

#### *Beneficial cumulative effects*

**Potential Cumulative Impact 3.24-24 Short-term effects on terrestrial resources from the Proposed Project in combination with 2017 court-ordered flushing and emergency dilution flows.**

The 2013 BiOp Flows have been analyzed under the individual resource sections for the Proposed Project. Potential Impact 3.24-1 in Section 3.24.2 *Cumulative Water Quality*

*Effects* provides background and context regarding agency re-consultation on the 2013 Joint Biological Opinion. For the reasons set out in Potential Impact 3.24-1, this analysis only considers the 2017 court-ordered flow requirements, which are not part of the existing conditions, and are a reasonably foreseeable flow condition; this analysis does not consider the potential new BiOp. The court-ordered flushing and emergency dilution flows are required primarily to reduce *C. Shasta* infection of Klamath River salmonids. Potential Impact 3.24-1 determines that it is unlikely that there would be exceedances of disease thresholds that would trigger emergency dilution flows. In the short term, particularly in dam removal year 2; therefore, emergency dilution flows are not expected to temporally overlap with the Proposed Project. 2017 court-ordered flushing flows may overlap in space and time with the Proposed Project, thus are the focus of this analysis.

Sediment discharge, sedimentation, and impacts to channel morphology from the Proposed Project are not expected to substantially adversely impact in-channel and riparian vegetation downstream of Iron Gate Dam (Potential Impact 3.5-4). This is because vegetation growing within, or along, the river channel margins can likely withstand, or revegetate following, this scale of perturbation, which is not dissimilar to seasonal and inter-annual river system dynamics over the past century. Conversely, sediment discharge, sedimentation, and changes to channel morphology would result in potentially significant impacts to the foothill yellow-legged frog (Potential Impact 3.5-16).

In years where reservoir drawdown flows would not meet the magnitude or duration of flushing flow requirements, surface and/or deep flushing flows may be implemented to meet the 2017 court-ordered flow requirements, which would be additional to flows from the Proposed Project. Although the magnitude of flows would not be greater than assessed in Section 3.5.5 [*Terrestrial Resources*] *Impacts and Mitigation*, there are one to two months when flushing flows may occur outside of the Proposed Project reservoir drawdown period (November 1 to March 15) since surface flushing flows potentially would occur until April 30 and deep flushing flows potentially would occur until May 31. Given that the surface and/or deep flushing flows are within the range of flows modeled for the Proposed Project, it is unlikely that sediment discharge, sedimentation, and impacts to channel morphology, would exceed what in-channel riparian vegetation can withstand, or that vegetation would not revegetate in a few years, due to the combination of flushing flows and reservoir drawdown.

With regard to wildlife, the combination of the Proposed Project and the 2017 court-ordered surface and/or deep flushing flows would extend the period of high flows that could scour foothill yellow-legged frog eggs or displace tadpoles (Potential Impact 3.5-16); however since flows would be expected to remain below the 10-year flood event, the incremental impact of the Proposed Project to potential scour of foothill yellow-legged frog eggs would not be cumulatively considerable.

#### Significance

*No significant cumulative impact on riparian vegetation or wildlife*

**Potential Cumulative Impact 3.24-25 Short-term effects on terrestrial resources from forest and wildfire management.**

The Proposed Project includes ground-disturbing activities (i.e., construction) that would have significant short-term impacts on wetlands and riparian habitats before mitigation (Potential Impact 3.5-1). Additionally, the Proposed Project includes ground-disturbing activities (i.e., construction and dam removal) that would have significant and unavoidable impacts on special-status plant species and rare natural communities (Potential Impacts 3.5-7 and 2.5-8). The Proposed Project would also result in noise and habitat modifications that would have significant short-term impacts on terrestrial wildlife species before mitigation (Potential Impact 3.5-10 for amphibians and reptiles), and a significant and unavoidable impacts on some other terrestrial wildlife species (Potential Impacts 3.5-10 for other special-status wildlife species, 3.5-11, 3.5-12, 3.5-13, and 3.5-14). Other forest and wildfire management activities within the Primary Area of Analysis for terrestrial resources (Table 3.24-1) could result in improved forest health and open understory for wildlife to traverse and create habitat for wildlife that use mature forests; however, there are potential impacts on terrestrial resources from forest and wildfire management activities. For example, if a forest and wildfire management project occurred during the breeding season, adults may abandon young and/or young may be trapped and unable to escape. Most known forest and wildfire management projects are not close to the mainstem Klamath River, except the Somes Bar Integrated Fire Management Project (approximately 90 miles downstream of Humbug), and Crawford Vegetation Management Project (approximately 70 miles downstream of Humbug). Although details of implementation methods for other planned forest and wildfire management activities are currently speculative, these projects would be required to adhere to state and/or federal guidelines (e.g., CEQA, California Endangered Species Act [CESA], and California Forest Practice Rules) which ensure that sensitive habitats (e.g., wetlands), rare natural communities, and special-status plant and wildlife species are inventoried prior to project implementation and avoided, or that mitigation is applied where necessary. Given that the other known forest and wildfire management projects are expected to adhere to state and/or federal guidelines, there would be no significant cumulative ground-disturbing, noise, or habitat modification impacts from the Proposed Project in combination with forest and wildfire management projects.

**Significance**

*No significant cumulative impact*

**Potential Cumulative Impact 3.24-26 Short-term effects on terrestrial resources from the Proposed Project in combination with wildfire.**

The Proposed Project includes ground-disturbing activities (i.e., construction) that would have significant short-term impacts on wetlands and riparian habitats before mitigation (Potential Impact 3.5-1). Additionally, the Proposed Project includes ground-disturbing activities (i.e., construction and dam removal) that would have significant and unavoidable impacts on special-status plant species and rare natural communities (Potential Impacts 3.5-7 and 2.5-8). The Proposed Project would result in noise and habitat modifications that would have significant short-term impacts on terrestrial wildlife species before mitigation (Potential Impact 3.5-10 for amphibians and reptiles). Additionally, the Proposed Project would result in noise and habitat modifications that would have significant and unavoidable impacts on terrestrial wildlife species (Potential Impact 3.5-10 for other special-status wildlife species, 3.5-11, 3.5-12, 3.5-13, and 3.5-14).

Wildfires regularly occur within the Klamath Basin, with multiple fires occurring in 2016 through 2018 (Table 3.24-1). Due to climate change, forests will be more susceptible to extreme wildfires, with an almost 50 percent increase in the frequency of extreme wildfires that burn over approximately 25,000 acres, and a 77 percent increase in the average area burned statewide by the end of the century (Bedsworth et al. 2018). Large fires can burn hundreds to thousands of acres; for example, in 2016 844 acres were burned in Siskiyou County. Although wildfires are a natural occurrence in California and low burning fires can improve forest health, potential impacts on special-status wildlife and plant species may occur. For example, if a wildfire occurred during the breeding season, adults may abandon young and/or young may be trapped and unable to escape. If a large fire occurs in the Primary Area of Analysis for terrestrial resources during the construction period for the Proposed Project, work would be suspended due to health and safety reasons (see Potential Cumulative Impact 3.24-34 [*Air Quality*]); therefore, temporal overlap is unlikely. If a large fire occurs in the Primary Area of Analysis for terrestrial resources immediately before or after the construction period for the Proposed Project, there could be a significant cumulative impact to terrestrial resources from the combination of the Proposed Project and wildfire, as the area affected would be increased, and the duration of time wildlife and vegetation are affected would be extended. However, the area of terrestrial resources affected by wildfire would likely be substantially greater than the confined construction, staging, and access areas affected by the Proposed Project; therefore, the incremental effect of the Proposed Project to terrestrial resources would not be cumulatively considerable in the context of wildfire.

#### Significance

*Not cumulatively considerable*

#### **Potential Cumulative Impact 3.24-27 Short-term and long-term effects on terrestrial resources from the Proposed Project in combination with agriculture, including cannabis cultivation.**

The Proposed Project includes ground-disturbing activities (i.e., construction) that would have significant short-term impacts on wetlands and riparian habitats before mitigation (Potential Impact 3.5-1), and ground-disturbing activities (i.e., construction and dam removal) that would have significant and unavoidable impacts on special-status plant species and rare natural communities (Potential Impacts 3.5-7 and 2.5-8). Additionally, the Proposed Project would result in noise and habitat modifications that would have significant short-term impacts on terrestrial wildlife species before mitigation (Potential Impact 3.5-10 for amphibians and reptiles), and significant and unavoidable impacts on some other terrestrial wildlife species (Potential Impact 3.5-10 for other special-status wildlife species, 3.5-11, 3.5-12, 3.5-13, and 3.5-14). Most agricultural projects, including cannabis cultivation projects, are reauthorizations of existing activities (Table 3.24-1) thus are captured by existing conditions, or are situated far from the Hydroelectric Reach where primary disturbances will take place for the Proposed Project; except for the adopted Cannaworx Zone Change near Humbug. Modifications to policies for agricultural zones to support pastured hog and poultry operations, as well as agritourism, are also underway in Siskiyou County (Table 3.24-1). Although details of implementation methods for other grazing projects are currently speculative, grazing management plans are required to adhere to state and/or federal guidelines which ensure that sensitive habitats (e.g., wetlands), rare natural communities, and special-status plant species are inventoried prior to project implementation and avoided, or that mitigation is applied where necessary. Additionally, there is a suite of relevant legislation for cannabis cultivation projects (see Potential Cumulative Impact 3.24-5 for

details). Given that any closely related agricultural projects that do fall within the Primary Area of Analysis are expected to adhere to state and/or federal guidelines, any adverse ground-disturbing impact to terrestrial resources is unlikely to be cumulatively significant.

Implementation of the Proposed Project would provide long-term benefits to wildlife by increasing connectivity within the Primary Area of Analysis for terrestrial resources (Potential Impact 3.5-29). Specifically, the Proposed Project enables wildlife movement by removing the Lower Klamath Project reservoirs and dam structures, incorporating wildlife-friendly fencing, allowing for the movement of wildlife such as deer and elk, which would be placed around the reservoirs to increase the success of restoring the reservoir areas (Section 2.7.4 *Restoration Within the Reservoir Footprint*), and incorporating the use of grazing animals (sheep, goats) to control invasive species (2.7.5 *Restoration of Upland Areas Outside of the Reservoir Footprint*). Grazing projects (Table 3.24-1) within or near the Primary Area of Analysis for terrestrial resources may result in reduced habitat connectivity with the installation of any new fences, ground disturbance, and reduced water quantity and quality affecting special-status terrestrial species, such as amphibians and reptiles. Although some other grazing projects could reduce wildlife connectivity through fencing installation, because the Proposed Project would increase connectivity, there would be no cumulative wildlife connectivity impacts on terrestrial resources due to implementation of the Proposed Project and grazing projects.

Cannabis cultivation projects and grazing and agricultural projects (Table 3.24-1) within or near the Primary Area of Analysis for terrestrial resources may result in reduced water quality affecting special-status terrestrial species such as amphibians and reptiles. Please see Potential Cumulative Impacts 3.24-25 and 3.24-26 for a discussion of the potential cumulative water quality impacts of the Proposed Project in combination with cannabis cultivation projects and grazing and agricultural projects. Given that Potential Cumulative Impacts 3.24-25 and 3.24-26 determine *no significant cumulative impact*, a follow-on cumulative impact to terrestrial species from adverse water quality is not foreseeable, and there would be no significant cumulative impact to terrestrial resources from cumulatively adverse water quality conditions.

### Significance

*No significant cumulative impact*

#### **Potential Cumulative Impact 3.24-28 Short-term effects on terrestrial resources from the combination of the Proposed Project and mining.**

The Proposed Project includes ground-disturbing activities (i.e., construction) that would have significant short-term impacts on wetlands and riparian habitats before mitigation (Potential Impact 3.5-1), and ground-disturbing activities (i.e., construction and dam removal) that would have significant and unavoidable impacts on special-status plant species and rare natural communities (Potential Impacts 3.5-7 and 2.5-8). The Proposed Project would also result in noise and habitat modifications that would have significant short-term impacts on terrestrial wildlife species before mitigation (Potential Impact 3.5-10 for amphibians and reptiles), and a significant and unavoidable impacts on terrestrial wildlife species (Potential Impact 3.5-10 for other special-status wildlife species, 3.5-11, 3.5-12, 3.5-13, and 3.5-14). Mining projects within the Primary Area of Analysis for terrestrial resources (Table 3.24-1) could also result in ground disturbance. Most other mining projects are withdrawal or remediation projects, renewals of existing permits in Del Norte County, or are situated in the Salmon River sub-basin (far from the

Hydroelectric Reach), with the exception of the new Plan of Operations for the existing Brooks Mine (Table 3.24-1). The new plan of operations for the Brooks Mine is near the expected hydrological and sedimentation footprint from dam removal, which extends downstream to Humbug Creek. Although details of implementation methods for mining projects are currently speculative, these projects would be required to adhere to state and/or federal guidelines, which would ensure that sensitive habitats (e.g., wetlands), rare natural communities, and special-status plant species are inventoried prior to project implementation and avoided, or that mitigation is applied where necessary. Given that the only expected mining project within the Primary Area of Analysis for terrestrial resources is a new plan of operations there would be no significant ground-disturbing impact to terrestrial resources from the combination of the Proposed Project and other closely related mining projects.

Mining projects (Table 3.24-1) within or near the Primary Area of Analysis for terrestrial resources may result in reduced water quality affecting special-status terrestrial species such as amphibians and reptiles. The majority of mining projects are located outside of the terrestrial Primary Area of Analysis. A new (20-acre) Plan of Operations for the existing Brooks Mine (Table 3.24-1) is near the expected hydrological and sedimentation footprint from dam removal, which extends downstream to Humbug Creek. Impacts from mining projects on water quality, and terrestrial wildlife that use waterways, would be anticipated to be less than significant, since mining projects would be required to adhere to existing water quality regulations and implement project-specific measures (e.g., storm water management). Although the Proposed Project would result in significant and unavoidable adverse impacts due to short-term water quality impacts (as described in Cannabis Cultivation above), there are no closely related grazing projects that would, in combination with the Proposed Project, result in further significant and adverse impacts to water quality that would cumulatively affect terrestrial wildlife. Thus, there would be no cumulative water quality impacts on terrestrial wildlife due to the Proposed Project in combination with closely related mining projects.

### Significance

#### *No significant cumulative impact*

#### **Potential Cumulative Impact 3.24-29 Short-term effects on terrestrial resources from the Proposed Project in combination with development and infrastructure projects.**

The Proposed Project includes ground-disturbing activities (i.e., construction) that would have: significant short-term impacts on wetlands and riparian habitats before mitigation (Potential Impact 3.5-1). Additionally, the Proposed Project includes ground-disturbing activities (i.e., construction and dam removal) that would have significant and unavoidable impacts on special-status plant species and rare natural communities (Potential Impacts 3.5-7 and 2.5-8). The Proposed Project would also result in noise and habitat modifications that would have significant short-term impacts on terrestrial wildlife species before mitigation (Potential Impact 3.5-10 for amphibians and reptiles), and a significant and unavoidable impacts on terrestrial wildlife species (Potential Impact 3.5-10 for other special-status wildlife species, 3.5-11, 3.5-12, 3.5-13, and 3.5-14). Development activities (Table 3.24-1) could have overlapping adverse impacts; however, no large-scale development projects are proposed within the Primary Area of Analysis for terrestrial resources. Development projects such as the potential nanocellulose facility in Yreka, are urban and considered to be too far away from the footprint of the Proposed Project to result in a cumulative impact to terrestrial resources.

Some potential infrastructure projects that involve crossings of tributaries to the Klamath River, including the Ayres Waterline near Grider Creek, and Siskiyou Telephone Fiber Optic Cable Installation near Clear Creek and Dillon Creek, but these are not reported as needing to cross the mainstem Klamath River and are downstream of the Hydroelectric Reach. No relevant development or infrastructure projects have been identified that, in combination with the Proposed Project, would result in significant adverse cumulative impacts to terrestrial resources.

### Significance

*No significant cumulative impact*

#### 3.24.6 Flood Hydrology

The geographic scope for cumulative flood hydrology effects is the same as the Area of Analysis for flood hydrology, as described in in Section 3.6.1 [*Flood Hydrology*] *Area of Analysis*. This includes the Klamath River downstream of the Oregon-California state line, which lies in portions of three California counties (Siskiyou, Humboldt, and Del Norte) (Figure 3.6-1). Hydrologic characteristics of features in the Upper Klamath Basin in Oregon are considered as they may pertain to potential impacts to stream flows into California.

Existing conditions for flood hydrology are detailed in Section 3.6.2 [*Flood Hydrology*] *Environmental Setting*, which provides a description of basin hydrology including precipitation; reservoirs; major rivers and tributaries; lakes; springs and seeps providing measurable flow; historical stream flows; and flood hydrology. Section 3.1.6 *Summary of Available Hydrology Information for the Proposed Project* also provides relevant information related to recent management decisions that dictate Klamath River flows downstream of Iron Gate Dam. These include the 2013 BiOp Flows and the 2017 court-ordered flushing and emergency dilution flows. Section 3.6.2 [*Flood Hydrology*] *Environmental Setting* includes consideration of major past or ongoing projects that have impacted, or currently impact, flood hydrology resources.

This cumulative impact analysis focuses on the potential impacts of the Proposed Project combined with other closely related projects that are not already considered in the analysis of flood hydrology resource area effects (Section 3.6). Non-project activity types within the flood hydrology Area of Analysis with the potential for significant cumulative flood hydrology effects are included in Table 3.24-1.

Significance criteria for cumulative flood hydrology effects are the same as defined in Section 3.6.3 *Significance Criteria* for the flood hydrology resource.

**Potential Cumulative Impact 3.24-30 Short-term and long-term flood hydrology effects from the Proposed Project in combination with other non-project activities.** Ongoing and reasonably foreseeable aquatic and riparian habitat restoration projects on the Klamath River have the potential for beneficial effects related to flood hydrology. Restoration projects are often designed to enhance river-floodplain connectivity in reaches with high habitat value (e.g., Mid Klamath Floodplain Assessment and Mine Tailing Remediation Plan), which provides accommodation space for flood flows and beneficial locations for depositing fine sediment.

Formal consultation of the 2013 BiOp flows was reinitiated in 2017 to improve management of *Ceratanova shasta* (*C. shasta*) infection among coho salmon in the Klamath River. Although specific flow details for a new BiOp resulting from re-consultation are speculative at this time, flow changes in the Klamath River due to a new BiOp (or the 2017 court-ordered flushing and emergency dilution flows [U.S. District Court 2017]) are not expected to alter flood hydrology or the FEMA 100-year floodplain in the Area of Analysis. This is because BiOp's specify minimum flow releases and do not impact peak flows during flood events.

Reasonably foreseeable large-scale development projects (see Table 3.24-1) within the flood hydrology Area of Analysis are not located within the 100-year floodplain between the Oregon-California state line and the Humbug Creek confluence, which is the reach where the Proposed Project has the potential to significantly impact the 100-year floodplain. Therefore, there would not be a significant and adverse combined impact of the Proposed Project and other large-scale development projects.

Although the Proposed Project would result in significant and unavoidable adverse impacts due to exposing structures to a substantial risk damage due to flooding (Potential Impact 3.6-3), there are no closely related projects that would, in combination with the Proposed Project, result in further significant and adverse flood hydrology impacts. Thus, there would be no significant cumulative flood hydrology impacts due to the Proposed Project and flow release and floodplain development projects. Additionally, there would be beneficial cumulative effects due to the Proposed Project and habitat restoration projects.

### Significance

*Beneficial cumulative effects* for the combination of the Proposed Project and riverine restoration

*No significant cumulative impact* for other non-project activities

#### 3.24.7 Groundwater

The geographic scope for cumulative groundwater effects is the same as the Area of Analysis for groundwater, as described in Section 3.7.1 [*Groundwater*] *Area of Analysis*. This includes the area within 2.5 miles of Copco No. 1, Copco No. 2, and Iron Gate reservoirs (Figure 3.7-1), which encompasses the area where the likelihood of impacts to groundwater wells due to implementation of the Proposed Project is greatest, as well as areas farther away from the reservoirs where regional groundwater flow data are generally available (Figure 3.7-2). The Area of Analysis lies within Siskiyou County, California and portions of Jackson and Klamath counties, Oregon. Portions of the Area of Analysis within Oregon are considered to the extent that they are likely to influence potential impacts to groundwater resources in California, rather than for potential impacts in Oregon.

Existing conditions for groundwater are detailed in Section 3.7.2 [*Groundwater*] *Environmental Setting*, which provides a description of regional groundwater conditions and more specific groundwater information in the Area of Analysis. This section characterizes local groundwater conditions in the Area of Analysis by examining well construction parameters in representative cross sections at Copco No. 1 and Iron Gate



reservoirs. Section 3.7.2 [*Groundwater*] *Environmental Setting* also includes consideration of major past or ongoing projects that have impacted, or currently impact, groundwater resources.

This cumulative impact analysis focuses on the potential impacts of the Proposed Project combined with other closely related projects that are not already considered in the analysis of groundwater resource area effects (Section 3.7). Non-project activity types within the groundwater Area of Analysis with the potential for significant cumulative effects to groundwater are included in Table 3.24-1.

Significance criteria for cumulative groundwater effects are the same as defined in Section 3.7.3 [*Groundwater*] *Significance Criteria* for the groundwater resource.

**Potential Cumulative Impact 3.24-31 Short-term and long-term groundwater effects from the Proposed Project in combination with other non-project activities.** There are no reasonably foreseeable large-scale agricultural, residential, or commercial developments proposed within the groundwater Area of Analysis that would have the potential to use substantial amounts of groundwater and thereby lower groundwater levels.

Floodplain restoration in the Copco No. 1 and Iron Gate reservoir footprints that would occur as part of the Proposed Project's Reservoir Area Management Plan (Appendix B: *Definite Plan*) has the potential for beneficial effects related to groundwater. Floodplain restoration projects are often designed to enhance surface water-groundwater interactions that result in more water being stored as groundwater and raising aquifer levels.

As the Proposed Project would not have a significant adverse impact on groundwater and there are no closely related projects that would, in combination with the Proposed Project, have a significant and adverse impact, there would be no cumulative groundwater impacts due to the Proposed Project and agriculture, residential and commercial development, cannabis cultivation, and riverine restoration projects.

#### Significance

*Beneficial cumulative effects* for the combination of the Proposed Project and riverine restoration projects

*No significant cumulative impact* for other non-project activities

### 3.24.8 Water Supply/Water Rights

The geographic scope for cumulative water supply/water rights effects is the same as the Area of Analysis for water supply/water rights, as described in in Section 3.8.1 [*Water Supply/Water Rights*] *Area of Analysis*. This includes portions of the Upper, Middle, and Lower Klamath River from the Oregon-California state line downstream to the river's mouth (Figure 3.8-1). The Area of Analysis also includes California irrigators and Wildlife Refuges that receive water through USBR's Klamath Irrigation Project. The Area of Analysis does not include the Shasta, Scott, Salmon, and Trinity rivers because water supply availability and water rights compliance in these rivers are independent of mainstem Klamath water supply and water rights and the Proposed Project.

Existing conditions for water supply/water rights are detailed in Section 3.8.2 [*Water Supply/Water Rights*] *Environmental Setting*, which provides a description of reservoir capacities, Biological Opinion-related water storage criteria, municipal water supply for the City of Yreka, and other water right holders along the Klamath River in the Area of Analysis. Section 3.8.2 [*Water Supply/Water Rights*] *Environmental Setting* includes consideration of major past or ongoing projects that have impacted, or currently impact, water supply/water rights.

This cumulative impact analysis focuses on the potential impacts of the Proposed Project combined with other closely related projects that are not already considered in the analysis of water supply/water rights resource area effects (Section 3.8). Non-project activity types within the water supply/water rights Area of Analysis with the potential for significant cumulative effects to water supply/water rights are included in Table 3.24-1.

Significance criteria for cumulative water supply/water rights impacts are the same as defined in Section 3.8.3 [*Water Supply/Water Rights*] *Significance Criteria* for the water supply/water rights resource.

**Potential Cumulative Impact 3.24-32 Cumulative water supply and water rights impacts from the combination of the Proposed Project and other potential non-project activities.**

Dam removal associated with the Proposed Project would have no significant impact on the amount of surface water flow available for diversion under existing water rights in the mainstem Klamath River within the Hydroelectric Reach and downstream from Iron Gate Dam (Potential Impact 3.8-1). The Proposed Project would also result in no significant impact with mitigation for releasing stored sediment that could affect water intake pumps and affecting the City of Yreka's municipal water supply (Potential Impacts 3.8-3 and 3.8-4, respectively).

The 2017 flow requirements (i.e., 2013 BiOp Flows plus the 2017 court-ordered flushing and emergency dilution flows) include winter-spring (November 1–April 30) surface flushing flows every year to scour surface riverbed sediments, deep flushing flows between February 15 and May 31 every other year to scour and disturb larger riverbed sediments, and emergency dilution flows between April 1 to June 15, if disease thresholds are exceeded (see Cumulative Potential Impact 3.24-2 for further discussion). As there is sufficient water released from the Lower Klamath Project under existing conditions and from the 2017 flow requirements to satisfy downstream water rights, and a new BiOp would be more likely to increase than decrease flows, there would be no significant cumulative impact to water supply/water rights in the hydroelectric reach or downstream of Iron Gate Dam from the combination of the Proposed Project and the re-consultation of the 2013 BiOp. In a parallel process, USBR has initiated renegotiation for a new Upper Klamath Basin agreement, which would be informed by the final flow requirements under the 2013 BiOp re-consultation regarding water rights among agricultural irrigators, Native American tribes, and environmental uses (Herald and News 2017; Herald and News 2018). However, at this time the outcome of the renegotiation for Upper Klamath Basin water rights is speculative and is not analyzed as part of the cumulative effects.

There are no reasonably foreseeable large-scale agricultural (including cannabis cultivation), development, or riverine restoration projects proposed within the water

supply/water rights Area of Analysis (see Table 3.24-1) that have a stated intent to use substantial amounts of Klamath River flows and thereby preclude other existing water right holders from completely exercising their right. It is possible that future restoration and streamflow enhancement projects (e.g., Klamath Basin Restoration Program, Stream Flow Enhancement Program) will have beneficial cumulative effects related to providing more instream flows within the Area of Analysis, but specific effects are speculative at this time.

The KHSA Interim Measure 16 (*Water Diversions*) involves modification of three existing PacifiCorp water rights in the Shovel Creek watershed to move the points of diversion to the mainstem Klamath River (see Table 3.24-1). Moving the points of diversion would not affect other water rights in the Area of Analysis because these are existing, active water rights and flow from the Shovel Creek watershed, which is a tributary to the Klamath River. Thus, diverting the water from the mainstem Klamath instead of higher in the tributaries would not affect the availability of water for downstream users.

Potential sediment releases from non-project activities are assessed in Potential Cumulative Impacts 3.24-2 [*Water Quality*], 3.24-40 and 3.24-41 [*Geology and Soils*]. No erosion- or turbidity-related impacts are found to be cumulatively considerable. Given that the Proposed Project would not have significant sedimentary impacts on water intake pumps and the City of Yreka's municipal water supply, and other projects would not result in cumulatively considerable erosion, turbidity, or sedimentation impacts, the combined impact to water intake pumps and the water supply would not be cumulatively significant.

Based on the above analysis, there are no closely related projects, including flow release, agricultural, residential, commercial, riverine restoration projects, or other non-project activities, that would, in combination with the Proposed Project, result in adverse cumulative water supply/water rights impacts.

### Significance

*No significant cumulative impact*

#### 3.24.9 Air Quality

The geographic scope for cumulative air quality effects is the same as the Area of Analysis for air quality (Section 3.9.1 [*Air Quality*] *Area of Analysis*) (Figure 3.9-1). This includes areas within and near the Limits of Work, and Siskiyou County as a whole.

Existing conditions are defined in Section 3.9.2 [*Air Quality*] *Environmental Setting*. A summary of annual ambient air quality data at a Yreka monitoring station is provided in Table 3.9-1, and the attainment status for air pollutants in Siskiyou County is provided in Table 3.9-2. Siskiyou County is designated as attainment or unclassified for all federal and state ambient air quality standards. Section 3.9.2 [*Air Quality*] *Environmental Setting* includes consideration of major past or ongoing projects that have impacted, or currently impact, air quality resources.

This cumulative impact analysis focuses on the potential impacts of the Proposed Project combined with other closely related projects that are not already considered in the analysis of air quality resource area effects (Section 3.9). Non-project activity types

within the air quality Area of Analysis with the potential for significant cumulative air quality impacts are included in Table 3.24-1.

Significance criteria for cumulative air quality impacts are the same as defined in Section 3.9.3 [Air Quality] Significance Criteria. As indicated in Section 3.9.5 [Air Quality] Potential Impacts and Mitigation, the Proposed Project would result in significant and unavoidable air quality impacts from emissions of NO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub> exceeding Siskiyou County Air Pollution Control District emissions thresholds (Potential Impact 3.9-2). Other potential air quality impacts from the Proposed Project, including exposure of sensitive receptors, would not be significant and adverse (Potential Impacts 3.9-1, and 3.9-3 through 3.9-5).

**Potential Cumulative Impact 3.24-33: Short-term increases in criteria air pollutant emissions under the Proposed Project in combination with forest and wildfire management projects.**

During the Proposed Project construction period (Table 2.7-1), there are proposed wildfire management activities, including prescribed or controlled burning, on national forest lands in Siskiyou County. These projects potentially include the Somes Bar Integrated Fire Management, Crawford Vegetation Management, and Harlan Vegetation Management and Fuels Reduction projects (Table 3.24-1). If these burning activities temporally overlap the Proposed Project construction period and produce substantial quantities of smoke near the Area of Analysis for air quality, there would be a significant cumulative impact due to elevated concentrations of NO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub>. Given that the Proposed Project would be well below thresholds for other criteria pollutants, including CO, SO<sub>x</sub>, and VOC, significant cumulative impacts are unlikely due to these pollutants. Reasonably foreseeable prescribed or controlled burning activities would, in combination with the Proposed Project, result in significant and adverse emissions of criteria air pollutants within the air quality Area of Analysis. Given the Proposed Project exceeds criteria thresholds for NO<sub>x</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub>, the incremental impact of the Proposed Project to the total emissions would be cumulatively considerable.

**Significance**

*Cumulatively considerable*

**Potential Cumulative Impact 3.24-34 Short-term increases in criteria air pollutant emissions under the Proposed Project in combination with wildfires.**

If wildfires were to produce substantial quantities of smoke near the proposed Limits of Work during the Proposed Project construction and restoration period, there would be an adverse air quality impact. However, if the Area of Analysis is disaster-stricken, it is likely that Proposed Project construction and restoration activities would be placed on hold to protect the health and safety of workers until the wildfire is under control. This is because while the Proposed Project includes a Fire Management Plan that is focused on prevention of fire caused by Proposed Project activities, the Fire Management Plan would also include fire watch activities and fire response methods consistent with related policies and standards in local, county, state, and federal jurisdictions (Section 2.7.8.9 *Fire Management*). The Fire Management Plan process and actions means that any wildfires in Siskiyou County large enough to have a significant impact on air quality and that would temporally overlap with scheduled air quality emissions from the Proposed Project would be unlikely to overlap with actual air quality emissions from the Proposed Project since the latter would be placed on hold; therefore, the cumulative impact would be less than significant.

### Significance

*No significant cumulative impact*

**Potential Cumulative Impact 3.24-35 Short-term increases in criteria air pollutant emissions under the Proposed Project in combination with industrial development projects.**

There are also two industrial projects in Yreka that have the potential to result in cumulative air quality impacts in combination with the Proposed Project. These include a Nanocellulose Facility (microscopic timber processing) and the Sousa Ready Mix Concrete Batch Plant Project (Table 3.24-1). Both of these projects would be located at least 15 miles southwest of the Limits of Work for the Proposed Project. Development of the nanocellulose facility is currently in the planning stages and it is unknown if the facility would be operational during the construction period for the Proposed Project (Table 2.7-1). An analysis of potential environmental impacts from the proposed nanocellulose facility has not been conducted, and the assessment of potential air quality impacts of nanocellulose production in general is in its infancy. For these reasons, it is currently speculative to determine if potential cumulative air quality impacts would result from operation of the proposed nanocellulose facility during the construction term for the Proposed Project.

In March 2016, a CEQA Initial Study/Mitigated Negative Declaration (IS/MND) was prepared for the Sousa Ready Mix Concrete Batch Plant Project. According to the IS/MND analysis, the batch plant project would result in less than significant air quality impacts during both construction and operation. From review of aerial photography (Google Earth™), it appears that the batch plant was constructed in 2016 and is currently operational. Due to the distance of the plant from the proposed Limits of Work, and the determination of less than significant air quality impacts from operations of the batch plant project, significant cumulative impacts would not result from operation of the batch plant during the construction period for the Proposed Project.

On this basis, the potential air quality impact of the Proposed Project, in combination with industrial development projects, would be less than significant.

### Significance

*No significant cumulative impact*

#### **3.24.10 Greenhouse Gas Emissions**

The geographic scope for cumulative GHG effects is the same as the Area of Analysis for GHG emissions and energy effects (Section 3.10.1 *[Greenhouse Gas Emissions] Area of Analysis*) (Figure 3.10-1). This includes areas within California and Oregon where construction activities related to removal of the Lower Klamath Project dam complexes would occur and hence contribute to GHG emissions in Siskiyou County as a whole.

Existing conditions are defined in Section 3.10.2 *[Greenhouse Gas Emissions] Environmental Setting* for this resource. A summary of GHG emission sources in California is provided in Table 3.10-2. Section 3.10.2 *[Greenhouse Gas Emissions] Environmental Setting* provides information about global climate change, the California GHG emissions inventory, and statewide and regional effects of climate change.

This cumulative impact analysis focuses on the potential impacts of the Proposed Project combined with other closely related projects that are not already considered in the analysis of GHG resource area effects (Section 3.10). Non-project activity types within the Area of Analysis with the potential for significant cumulative GHG impacts are included in Table 3.24-1.

Significance criteria for cumulative GHG effects are the same as defined in Section 3.10.3 [*Greenhouse Gas Emissions*] *Significance Criteria*.

As indicated in Section 3.10.5 [*Greenhouse Gas Emissions*] *Potential Impacts and Mitigation*, the Proposed Project would not exceed the SCAQMD's GHG emissions significance threshold (Potential Impact 3.10-1), and would not conflict with AB 32, Executive Order S-3-05, SB 32, or the California Renewables Portfolio Standard (RPS) (S-14-08, SB X1-2, and SB 350) (Potential Impact 3.10-2). In particular, with respect to the California RPS, PacifiCorp would reduce its CO<sub>2</sub> emissions for its power generation portfolio over the next two decades and thus would not have a significant impact on GHG emissions. Overall, the Proposed Project would result in no significant GHG emissions impacts. GHG emissions, by nature, represent a cumulative impact; therefore, for CEQA purposes the relative contribution of the Proposed Project and other non-project activities to GHGs are assessed according to the aforementioned legislative guidelines. Although no other reasonably foreseeable future energy-related projects have been identified within the Area of Analysis for GHGs, should these other projects occur they would also be required to comply with AB 32, Executive Order S-3-05, SB 32, and California RPS.

#### **Potential Cumulative Impact 3.24-36 Long-term GHG effects from the Proposed Project in combination with restoration, reforestation, and renewable energy projects.**

The Proposed Project would result in no net loss of vegetation, and would not have long-term operational GHG emissions. Additionally, the replacement of hydroelectric energy following the decommissioning of the Lower Klamath Project would not result in a long-term increase in GHG emissions from non-renewable power sources, because PacifiCorp would reduce its CO<sub>2</sub> emissions over the next two decades (Potential Impact 3.10-2). No other closely related energy projects that are not part of existing conditions have been identified within the Area of Analysis. There are habitat enhancement projects and projects to reforest national forest lands burned in recent years by wildfires within the Area of Analysis with the potential for beneficial environmental effects related to GHG emissions (Table 3.24-1), which have the potential to increase carbon sequestration in Siskiyou County. The Proposed Project, in combination with renewable energy, restoration, and reforestation projects, would have no adverse cumulative GHG emissions effects and could have beneficial effects.

#### **Significance**

*Beneficial cumulative effects*

**Potential Cumulative Impact 3.24-27 Short-term and long-term GHG effects from the Proposed Project in combination with forest and wildfire management projects.**

Prescribed or controlled burning has the potential to generate significant adverse GHG emissions including CO<sub>2</sub> emissions, which have the potential to contribute to global climate change. Non-project fuel reduction activities within the Area of Analysis include the Somes Bar Integrated Fire Management, Crawford Vegetation Management, and Harlan Vegetation Management and Fuels Reduction projects. These projects may generate GHGs in the short term by undertaking prescribed or controlled burning that would overlap in space and time with short-term GHG emissions from the Proposed Project; this is conservatively assessed as a significant cumulative impact. Given that emissions from the Proposed Project would be below significance thresholds (Potential Impacts 3.10-1 and 3.10-2), and would be relatively small in the context of low burning of large acreages for wildfire management, the incremental cumulative impact of the Proposed Project would be less than cumulatively considerable. In the long term, forest management practices have the potential to reduce the occurrence of catastrophic wildfires that would produce significant quantities of GHG emissions, thus could be beneficial for reducing GHG emissions. The Proposed Project would not have long-term operational GHG emissions, and would result in no net loss of vegetation. In the long term, cumulative GHG emissions from the Proposed Project, in combination with forest and wildfire management projects, would be beneficial.

**Significance**

*Not cumulatively considerable* in the short term

*Beneficial cumulative effects* in the long term

**Potential Cumulative Impact 3.24-38 Short-term and long-term GHG effects from the Proposed Project in combination with agriculture.**

Cumulative GHG-related effects of the Proposed Project, in combination with non-project agriculture, can be considered both during the short-term construction period, and in the long term. Most agricultural projects occurring in the Klamath Watershed are reauthorizations of existing activities (Table 3.24-1), thus are existing conditions. However, zone changes are currently in-process to support additional agricultural land uses (on previously non-agricultural zoned land), including the Cannaworx Zone Change (44 ac) and Kidder Creek Orchard Camp Zone Change (170 ac), both in Siskiyou County. Modifications to policies for agricultural zones to support pastured hog and poultry operations, as well as agritourism, are also underway in Siskiyou County (Table 3.24-1). Such project could have GHG impacts, especially if they result in livestock grazing activities, which have the potential to result in the release of methane (CH<sub>4</sub>) from animals, such as cattle, when they feed on grasses. Although GHG emissions are complex, CH<sub>4</sub> has a global warming potential that is 21 times greater than CO<sub>2</sub>.

In the short term, GHG emissions during the Proposed Project construction period could overlap with the expansion of non-project agricultural activities above existing conditions within the Area of Analysis. It is speculative to assess the short-term cumulative impact without knowledge of future land uses, but we generally do not consider that the extent of reasonably foreseeable agricultural activities is substantial enough to exceed relevant GHG thresholds in combination with the Proposed Project. For example, the Cannaworx Zone Change would represent an increase of 0.0038 percent of agricultural land in Siskiyou County, and in the unlikely scenario that the entire site was used for grazing,

this would represent an increase of 0.0112 percent of grazing land in Siskiyou County (above 2014 agricultural and grazing land areas shown in Table 3.15-1). The Kidder Creek Orchard Camp Zone Change is unlikely to involve any substantial increase of grazing activities, because it supports the expansion of a recreational and spiritual retreat camp. On this basis, there would be no significant short-term cumulative impact from the Proposed Project in combination with other closely related agricultural projects.

In the long term, the Proposed Project includes the transfer of PacifiCorp lands immediately surrounding the Lower Klamath Project ("Parcel B lands") from PacifiCorp to the KRRC prior to dam removal, and then to the respective states (i.e., California, Oregon), as applicable, or to a designated third-party transferee, following dam removal (Section 2.7.11 *Land Disposition and Transfer*). The Parcel B lands would thereafter be managed for public interest purposes, which could include: open space, active wetland and riverine restoration, tribal mitigation, river-based recreation, grazing, and potentially other uses. It is too speculative to determine which land uses would occur in any particular place, or over what area, on the Parcel B lands. The occurrence of agriculture on Parcel B lands, and expansion of non-project agricultural activities within the Area of Analysis, could be associated with an increase in GHG-emitting livestock grazing activities, resulting in an adverse cumulative impact. However, with limited knowledge of future land uses and complex benefits and impacts, it is speculative to qualitatively assess the long-term GHG emissions from Proposed Project agriculture and other agricultural activities within the Area of Analysis. Nevertheless, given the miniscule percentage changes of grazing lands for reasonably foreseeable agricultural projects described in the prior paragraph, it is likely that any establishment of grazing on Parcel B lands in the long term would also represent a relatively small portion of the total grazing land area in Siskiyou County. As there is unlikely to be a substantial change in grazing land area, there is no foreseeable significant cumulative impact in the long term.

### Significance

#### *No significant cumulative impact*

#### **Potential Cumulative Impact 3.24-39 Long-term GHG effects from the Proposed Project in combination with industrial development projects.**

Along with the wildfire management and agricultural activities, there are also two industrial projects in Yreka, CA that have the potential to result in cumulative GHG impacts in combination with the Proposed Project. These include a Nanocellulose Facility (microscopic timber processing) and the Sousa Ready Mix Concrete Batch Plant Project. Development of the Nanocellulose Facility is currently in the early planning stages and it is unknown if, or when, the facility will be constructed or become operational. An analysis of potential environmental impacts from the proposed facility has not been conducted. Depending on the process used for nanocellulose production, there is the potential for the generation of significant GHG emissions due to, among other factors, energy use and wood pulp production. Most processes used to produce nanocellulose materials are energy intensive, with the potential to result in substantial GHG emissions depending on the available energy supply (e.g., fossil-fuel vs. renewable energy sources). The production of wood pulp, which is a common starting material for nanocellulose materials, results in significant emissions of both biogenic and non-biogenic CO<sub>2</sub>. As the production capacity of the proposed facility and the process that would be used to produce nanocellulose materials are unknown, it is currently speculative to determine if potential cumulative GHG impacts would result from operation of the proposed Nanocellulose Facility in combination with the Proposed



Project. In March 2016, a CEQA Initial Study/Mitigated Negative Declaration was prepared for the Sousa Ready Mix Concrete Batch Plant Project. According to the analysis in the CEQA document, the GHG emissions from construction and operation of the batch plant would result in less than significant impacts. From review of aerial photography, it appears that the batch plant was constructed in 2016 and is currently operational. Because the batch plant project and Proposed Project were determined to individually result in less than significant GHG impacts, significant cumulative impacts would likely not result from the Proposed Project in combination with the operation of the batch plant.

### Significance

*No significant cumulative impact*

#### 3.24.11 Geology, Soils, and Mineral Resources

The Area of Analysis for geology and soils includes the riverbed and reservoir banks at the sites of the Iron Gate, Copco No. 1, and Copco No. 2 dams and associated facilities, as well as the riverbed and adjacent banks along the Klamath River from the Oregon-California state line to the Pacific Ocean, including the Klamath River Estuary.

Existing conditions for geology, soils, and mineral resources are described in Section 3.11.2 [*Geology, Soils, and Mineral Resources*] *Environmental Setting*. The Klamath River traverses approximately 260 river miles. With a watershed area of approximately 15,722 mi<sup>2</sup>, the Klamath River produces the second largest average annual runoff (Kruse and Scholz 2006) and sediment flux (Willis and Griggs 2003) of California's rivers. The cumulative average annual sediment delivery from the Klamath River to the ocean was estimated to be 6,237,500 tons/yr (Stillwater Sciences 2010) (Table 3.11-3). Additionally, the four Lower Klamath Project reservoirs currently store approximately 13.15 million cubic yards (yd<sup>3</sup>) of sediment (Table 3.11-4) (USBR 2012). Section 3.11.2 [*Geology, Soils, and Mineral Resources*] *Environmental Setting* includes consideration of major past or ongoing projects that have impacted, or currently impact, geology, soils, and mineral resources.

This cumulative impact analysis focuses on the potential impacts of the Proposed Project combined with other closely related projects that are not already considered in the analysis of geology, soils, and mineral resources area effects (Section 3.11). Non-project activity types within the geology and soils Area of Analysis with the potential for significant cumulative geology and soil impacts are included in Table 3.24-1.

Significance criteria for geology and soil cumulative impacts are the same as defined in Section 3.11.3 [*Geology, Soils, and Mineral Resources*] *Significance Criteria*.

#### **Potential Cumulative Impact 3.24-40 Short-term soil disturbance, erosion, and sedimentation effects from the Proposed Project in combination with other construction projects.**

The Proposed Project would result in soil disturbance, erosion, and sediment deposition within the Area of Analysis for geology, soils, and mineral resources, as summarized below. The Proposed Project would not have a significant soil disturbance and erosion impact associated with heavy vehicle use, excavation, and grading, because an Erosion Control Plan would set out best management practices to be followed on-site (Potential Impact 3.11-2). The Proposed Project would also not have a significant sedimentation

impact downstream of the Lower Klamath Project reservoirs, or the sedimentation would be beneficial (Potential Impact 3.11-5). It is possible that some projects involving construction activities could overlap with the Proposed Project, including restoration and infrastructure projects, and these would have temporary, short-term soil disturbance, erosion, and sedimentation impacts (Table 3.24-1). Potential future overlapping riverine restoration projects include projects under the Klamath Basin Restoration Program and Gravel Enhancement below Iron Gate Dam for Salmon. Some potential infrastructure projects that involve crossings of tributaries to the Klamath River, including the Ayres Waterline near Grider Creek, and Siskiyou Telephone Fiber Optic Cable Installation near Clear Creek and Dillon Creek, but these are not reported as needed to cross the mainstem Klamath River and are downstream of the Hydroelectric Reach. No potential large-scale development projects identified in Table 3.24-1 are near the mainstem Klamath River. Section 402 of the Clean Water Act requires a *General Stormwater National Pollution Discharge Elimination System Permit for Construction Activities* across Oregon and California, and an *Erosion Control Plan* is required together with this Permit. Because infrastructure and development projects near the mainstem Klamath are not expected to overlap with the Proposed Project, and other construction-related disturbances including construction for riverine restoration, would be subject to the same rigorous erosion planning and prevention as the Proposed Project, there would not be a significant cumulative erosion impact from construction activities.

### Significance

#### *No significant cumulative impact*

**Potential Cumulative Impact 3.24-41 Short-term soil disturbance, erosion, and sedimentation effects from the Proposed Project in combination with mining, forest and wildfire management, and agriculture.**

Non-construction sediment-generating activities, such as wildfire, forest and wildfire management, mining and agriculture, would be subject to separate planning standards and requirements than for construction activities assessed in Potential Cumulative Impact 3.24-42 above. Wildfires are a naturally recurring event in the Klamath Basin, and have the potential to result in substantial erosion and sediment delivery if rainfall events occur before vegetation reestablishes. Increased sediment delivery would be most likely if a wildfire occurred late in the fire season (fall), and a combination of the Proposed Project and rain storms occurred shortly following the fire. As discussed in Potential Cumulative Impact 3.24-4, this could increase suspended sediment and sedimentation additional to the Proposed Project, and the water quality impact could be significant. The combination of geology and soils impacts under the Proposed Project and wildfires would also be significant, if temporal and spatial overlap occurs. However, given that geology and soil impacts, including soil disturbance, erosion, and sedimentation impacts, associated with the Proposed Project in isolation would not be significant (see Potential Impacts 3.11-2, 3.11-3, 3.11-5, 3.11-6), and these impact would likely be small compared with flooding on large areas of bare ground exposed by wildfire, the incremental impact of the Proposed Project would not be cumulatively considerable.

Most known forest and wildfire management projects are not close to the mainstem Klamath River, except the Somes Bar Integrated Fire Management Project (approximately 90 miles downstream of Humbug), and Crawford Vegetation Management Project (approximately 70 miles downstream of Humbug). Most mining projects described in the assessment of existing conditions for the Proposed Project are

withdrawal or remediation projects, or are situated in tributaries far from the Hydroelectric Reach, apart from the new Plan of Operations for the existing Brooks Mine. The new plan of operations for the Brooks Mine (Table 3.24-1) is near the expected hydrologic and sedimentation footprint from Lower Klamath Project dam removal, which extends through the Hydrologic Reach and the Middle Klamath River from Iron Gate Dam to Humbug Creek. Most agricultural projects, including cannabis cultivation projects, are also captured by existing conditions, or are situated far from the Hydroelectric Reach, except for the adopted Cannaworx Zone Change near Humbug. The Cannaworx Zone Change would convert Open Space to Non-Prime Agricultural zoned land, thus supporting agricultural activities on previously agriculture-free land. Based on the above information, the soil disturbance, erosion, and sedimentation impact of the Proposed Project, in combination with forest and wildfire management, mining-related activities, and agricultural activities, would not be cumulatively significant.

### Significance

*Not cumulatively considerable* for wildfire

*No significant cumulative impact* for forest and wildfire management, mining-related activities, and agricultural activities

### **Potential Cumulative Impact 3.24-42 Short-term hillslope instability, effects to earthen dam embankments, and/or bank erosion from the Proposed Project in combination with other potential non-project activities.**

Slope stability analyses conducted for the Proposed Project indicate that segments of the Copco No. 1 Reservoir rim have a potential for slope failure that could impact existing roads and/or private property. These areas include approximately 3,700 linear feet of slopes along Copco Road and approximately 2,800 linear feet of slope adjacent to private property (Appendix B: *Definite Plan*). Up to eight parcels in these areas have existing habitable structures that could potentially be impacted. The impact of the Proposed Project on hillslope instability in reservoir rim areas would be significant. Implementation of Mitigation Measure GEO-1 would reduce the cumulative impact to less than significant. No other projects have been identified that would cause hillslope instability along the rim of Copco No. 1 Reservoir (or the rims of Iron Gate or Copco No. 2 reservoirs) (Table 3.24-1); therefore, there would be no cumulative impact.

Analyses of embankment stability during drawdown at the earthen dams (i.e., Iron Gate Dam and J.C. Boyle Dam) indicate that the proposed reservoir drawdown rates would not result in substantial embankment instability (Appendix B: *Definite Plan*). Small, shallow slumping along the upstream embankment slopes due to the potential strength loss of surficial materials during drawdown would not threaten the structural integrity of the embankments or deliver a substantial amount of sediment. No other projects have been identified that would cause embankment instability at Iron Gate Dam and J.C. Boyle Dam (Table 3.24-1); therefore, there would be no cumulative impact related to embankment stability.

Drawdown flow rates for the Proposed Project are similar to existing and historical flow rates, and would be adjusted according to the water year type, thus substantial bank erosion is not expected (Potential Impact 3.11-4). As discussed in Potential Impact 3.24-2 [*Water Quality*], 2017 flow requirements (i.e., 2013 BiOp Flows plus the court-ordered flushing and emergency dilution flows) are within the range of flows modeled

under the Proposed Project; therefore, there would not be any cumulative impact related to bank erosion.

**Significance**

*Not cumulatively considerable with mitigation* for short-term instability in reservoir rim areas

*No significant cumulative impact* for instability of earthen embankments or bank erosion downstream of reservoirs

**Potential Cumulative Impact 3.24-43 Short-term seismic activity effects from the Proposed Project in combination with other potential non-project activities.**

The nearest active fault is approximately five miles from the dams proposed for removal. These faults are reported not to have moved within the past 1.5 million years and, therefore, are considered inactive (Personius et al. 2003). Drawdown of reservoirs of this size is not expected to induce seismicity. Reservoir draining is also not expected to cause volcanic activity due to the distance from volcanic hazards (e.g., Mount Shasta). No other closely related projects have been identified that are likely to induce seismic or volcanic activity. Based on the above information, the short-term seismic activity effects from the Proposed Project, in combination with other potential non-project activities, would not be cumulatively significant.

**Significance**

*No significant cumulative impact*

**Potential Cumulative Impact 3.24-44 Long-term mineral resources effects from the Proposed Project in combination with mining activities.**

Diatomite deposits near the southern downstream shore of Copco No. 1 Reservoir are currently inaccessible for extraction purposes due to their location in the reservoir and existing erosion. Under the Proposed Project, land ownership within the reservoir areas would be transferred to the KRRC and then to the State of California, or to a designated third-party transferee in the case of Copco No. 1 Reservoir (Section 2.7.11 *Land Disposition and Transfer*). The lands would thereafter be managed for public interest purposes, which could include open space, active wetland and riverine restoration, river-based recreation, grazing, and potentially others. It is likely that the accessibility of diatomite deposits will be a continuation of the existing condition, and effects from the Proposed Project, in combination with other potential mining activities (Table 3.24-1), would not be cumulatively significant.

**Significance**

*No significant cumulative impact*

**3.24.12 Historical Resources and Tribal Cultural Resources**

The geographic scope for cumulative historical and tribal cultural resources effects is the same as the Area of Analysis for historical and tribal cultural resources, as described in in Section 3.12.1 [*Historical and Tribal Cultural Resources*] *Area of Analysis*. This

includes the combined area of analysis (Figure 3.12-1) and its four subareas<sup>176</sup> (Figures 3.12-2 through 3.12-5). The four subareas allow for individual impact analyses specific to geographic location (e.g., reservoir footprint, riverside location) and Proposed Project activity timing (e.g., pre-dam removal, reservoir drawdown, restoration activities). While the subareas overlap, this has no bearing on the analysis of any historical or tribal cultural impact, since the subareas are considered independently by impact.

Existing conditions for historical and tribal cultural resources are detailed in Section 3.12.2 [*Historical and Tribal Cultural Resources*] *Environmental Setting*. Archaeological investigations have confirmed nearly 10,000 years of human presence in the Mid and Upper Klamath Basins. The Klamath River flows through several culture regions in California's Northwest Coast, the Great Basin, and portions of the Columbia Plateau. These unique cultural regions have been occupied by Native American Tribes recognized now as part of the Klamath Tribes, Quartz Valley Indian Reservation, Shasta Nation, Shasta Indian Nation, Karuk, the Hoopa Valley Tribe<sup>177</sup>, Resighini Rancheria, and the Yurok Tribe. The discovery of gold in 1848 was the catalyst that caused a dramatic alteration of both Native American and Euro American cultural patterns in California. Section 3.12.2 [*Historical and Tribal Cultural Resources*] *Environmental Setting* includes consideration of major past or ongoing projects that have impacted, or currently impact, historical and tribal cultural resources.

This cumulative impact analysis focuses on the potential impacts of the Proposed Project combined with other closely related projects that are not already considered in the analysis of historical and tribal cultural resources effects (Section 3.12). Non-project activity types within the historical and tribal cultural resources Area of Analysis with the potential for significant cumulative effects to historical and/or tribal cultural resources are included in Table 3.24-1.

Significance criteria for cumulative historical and tribal cultural resources are the same as defined in Section 3.12.3 [*Historical and Tribal Cultural Resources*] *Significance Criteria* for the resource.

**Potential Cumulative Impact 3.24-45 Long-term effects on the Klamath River fishery tribal cultural resource of the Proposed Project in combination with restoration, flow enhancement, and water quality improvement projects.** The Proposed Project would benefit the cultural riverscape and ecosystem health, including tribal fisheries resources, in the long term by dam removal and elimination of hatchery production (Potential Impact 3.12-9). The Proposed Project would also benefit the ability of tribes to use the Middle and Lower Klamath River for ceremonial and other purposes because of reductions in blue-green algae concentrations (Potential Impact 3.12-10). Other restoration, flow enhancement, and water quality improvement projects along the Klamath River and its tributaries (creeks and rivers) are anticipated to improve

---

<sup>176</sup> *Subarea 1* – Proposed Project Limits of Work inclusive of known cultural sites that lie partially within and partially outside the Limits of Work; *Subarea 2* – Post-dam removal altered 100-year floodplain along the 18-river mile stretch of the Middle Klamath River downstream of Iron Gate Dam (RM 193.1) to the confluence with Humbug Creek (RM 174); *Subarea 3* – 0.5-mile buffer on either side of the Hydroelectric Reach, Middle Klamath River, and Lower Klamath River encompassing the existing conditions and post-dam removal 100-year floodplain; *Subarea 4* – Parcel B lands.

<sup>177</sup> The term Hupa describes the Hupa People. The term Hoopa is used to reference the Hoopa Valley place or the tribal government.

the Klamath River fishery tribal cultural resource by enhancing water quality (e.g., water temperature, suspended sediments, nutrients, dissolved oxygen, pH, chlorophyll-a, and algal toxins) and habitat through riparian habitat restoration, placement of off-channel habitat features, floodplain restoration, incorporation of large wood into tributaries to the Klamath River, and increases in stream flow. Reasonably foreseeable restoration projects that would occur within the post-dam removal altered 100-year floodplain between Iron Gate Dam and Humbug Creek, corresponding to *Subarea 2* (Figure 3.12-3) of the historical and tribal cultural resources Area of Analysis, or the existing conditions and post-dam removal 100-year floodplain of the Klamath River, corresponding to *Subarea 3* (Figure 3.12-4) of the historical and tribal cultural resources Area of Analysis, are included in Table 3.24-1). Note that this potential effect is not relevant to other historical and tribal cultural resources Area of Analysis subareas (i.e., *Subarea 1* and *Subarea 4*).

Restoration, flow enhancement, and water quality improvement projects would increase the amount of cold water flowing in the river, improving water temperature conditions for salmonids, while the Proposed Project would improve water temperature conditions by returning more natural seasonal and daily variations. Increases in river flows from restoration, flow enhancement, and water quality improvement projects would also be beneficial for water quality by diluting chlorophyll-a and algal toxins concentrations. The Proposed Project also would decrease high seasonal chlorophyll-a concentrations and periodically high algal toxin concentrations by eliminating reservoir environment that currently supports growth conditions for toxin-producing nuisance blue-green algal species such as *Microcystis aeruginosa*. Overall, the Proposed Project, in combination with restoration, flow enhancement, and water quality improvement projects, would result in beneficial cumulative effects on the Klamath River fishery tribal cultural resource within *Subarea 2* and *Subarea 3* of the historical and tribal cultural resources Area of Analysis.

### Significance

*Beneficial cumulative effects* in *Subarea 2* and *Subarea 3* of the historical and tribal cultural resources Area of Analysis

#### **Potential Cumulative Impact 3.24-46 Short-term historical and tribal cultural resources effects of the Proposed Project in combination with 2017 court-ordered flushing and emergency dilution flows.**

The 2013 BiOp Flows have been analyzed under the individual resource sections for the Proposed Project. Potential Impact 3.24-2 in Section 3.24.2 *Cumulative Water Quality Effects* provides background and context regarding agency re-consultation on the 2013 BiOp. For the reasons set out in Potential Impact 3.24-2, this analysis only considers the 2017 court-ordered flow requirements, which were imposed after issuance of the Notice of Preparation (i.e., are not part of the existing conditions), and are a reasonably foreseeable flow condition; this analysis does not consider the potential new BiOp.

The existing 100-yr floodplain in the Middle Klamath River downstream of Iron Gate Dam between RM 190 and 171, defined as *Subarea 2*, would increase slightly under the Proposed Project, and associated flooding and erosion may have a significant and unavoidable impact on historical and tribal cultural resources along this reach of the Klamath River, (Potential Impacts 3.12-3 and 3.12-14). In other reaches of the Klamath River, the floodplain is not expected to change (Potential Impacts 3.12-3 and 3.12-14). There are no closely related development projects that would, in combination with the

Proposed Project, have a significant and adverse impact on flooding in *Subarea 2* (Table 3.24-1), where the floodplain is expected to increase under the Proposed Project. During the period when the Proposed Project would occur, the 2017 flow requirements (i.e., 2013 BiOp Flows plus the 2017 court-ordered flushing and emergency dilution flows) would be in effect (see Cumulative Impact 3.24-1 for additional detail). However, these flow requirements are not sufficiently high as to increase flooding risk, thus there would be no cumulative flooding and/or erosion impacts to historical and tribal cultural resources located within the 100-year floodplain.

As mentioned in Impact 3.24-45 above, the Proposed Project would benefit the cultural riverscape and ecosystem health, including tribal fisheries resources, by dam removal and elimination of hatchery production (Potential Impact 3.12-9). The 2017 flow requirements would improve Klamath River fishery tribal cultural resource by reducing the incidence of fish disease (see Section 3.3.5.5 *Fish Disease and Parasites*), and in combination with the removal of upstream migration barriers (i.e., the Lower Klamath Project dams) and improvements to the quality of riverine habitat in the Middle Klamath River and the Hydroelectric Reach (see Section 3.3.5.8 *Aquatic Habitat*), there would be a cumulative beneficial effect on the fishery tribal cultural resource.

#### Significance

*No significant cumulative impact* related to short-term flooding and/or erosion of tribal cultural resources located within the 100-year floodplain

*Beneficial cumulative effects* on fishery tribal cultural resource in the short term

**Potential Cumulative Impact 3.24-47 Short-term and/or long-term historical and tribal cultural resources effects from the Proposed Project in combination with development projects.**

#### *Tribal Cultural Resources*

Significant and unavoidable short-term ground-disturbing construction-related impacts on archaeological and non-archaeological tribal cultural resources (TCRs) would occur with mitigation for the 4 to 8-year period of dam removal and restoration activities under the Proposed Project (Potential Impacts 3.12-1, 3.12-4, 3.12-5). The ground-disturbing activities would occur within *Subarea 1* of the historical and tribal cultural resources Area of Analysis (Figure 3.12-2). Additionally, the Proposed Project would result in potential significant shifting and exposure of existing tribal cultural resources within the reservoir footprints and Klamath River (Potential Impacts 3.12-2, 3.12-3, and 3.12-7) during and following reservoir drawdown. Following reservoir drawdown, the Proposed Project would include floodplain restoration activities in the reservoir footprints and upland areas of *Subarea 1* (Appendix B: *Definite Plan – Appendix H*). There are no reasonably foreseeable large-scale development projects (see Table 3.24-1) within *Subarea 1* that that would, in combination with the Proposed Project, result in significant and adverse impacts to archaeological and non-archaeological TCRs.

Following dam removal, transfer of Parcel B lands would occur under the Proposed Project, where Parcel B lands correspond to *Subarea 4* of the historical and tribal cultural resources Area of Analysis (Figure 3.12-5). This would result in public interest land management on these lands, which could include open space, active wetland and riverine restoration, tribal mitigation, river-based recreation, grazing, and potentially other uses. While it is too speculative to determine which land uses would occur in any particular place within the Parcel B lands, there are no reasonably foreseeable large-

scale development projects currently identified within the Parcel B lands (Table 3.24-1) and it is highly unlikely that public interest land management would include large-scale development projects.

Overall, there would be no cumulative impacts to tribal cultural resources in *Subarea 1* and *Subarea 4* due to the combination of the Proposed Project and development projects. Note that this potential effect is not relevant to other historical and tribal cultural resources Area of Analysis subareas (i.e., *Subarea 2* and *Subarea 3*).

#### *Historical Built Environment*

The Proposed Project would result in significant adverse impacts to Copco No. 1 Dam, Copco No. 2 Dam, and Iron Gate Dam, their associated hydroelectric facilities, and the Klamath River Hydroelectric Project District (Potential Impact 3.12-11) because these historic period complexes would be removed. The Klamath River Hydroelectric Project District is located within *Subarea 1* of the historical and tribal cultural resources Area of Analysis (Figure 3.12-2). There are no reasonably foreseeable large-scale development projects (see Table 3.24-1) within *Subarea 1* that that would, in combination with the Proposed Project, result in a combined significant impact to the historical built environment.

Significant and unavoidable short-term ground-disturbing construction-related impacts on historic-period archaeological resources would occur with mitigation for the 4 to 8-year period of dam removal and restoration activities under the Proposed Project (Potential Impacts 3.12-12, 3.12-15, 3.12-16). The ground-disturbing activities would occur within *Subarea 1* of the historical and tribal cultural resources Area of Analysis (Figure 3.12-2). There are no reasonably foreseeable large-scale development projects (see Table 3.24-1) within *Subarea 1* that that would, in combination with the Proposed Project, result in significant and adverse impacts to historic-period archaeological resources.

#### Significance

*No significant cumulative impact in Subarea 1 and Subarea 4 of the historical and tribal cultural resources Area of Analysis*

#### 3.24.13 Paleontologic Resources

The Area of Analysis for paleontologic resources is the region within and adjacent to the Klamath River 100-year floodplain, from the Oregon-California state line to the Klamath River's mouth near Requa, California (Figure 3.13-1). This includes the area within 1,000 feet of FEMA Flood Zones A and AE, or downstream of Iron Gate Dam within 1,000 feet of the National Hydrography Dataset Klamath River centerline, and upstream of Iron Gate Dam within five miles of the Klamath River centerline.

Existing conditions for paleontologic resources are as described in Section 3.14.2 *[Paleontologic Resources] Environmental Setting*. The majority of bedrock deposits within the Area of Analysis for paleontologic resources are not fossil-bearing units. Two mapped geologic units that contain paleontologic resources are present within the Area of Analysis: (1) the unnamed diatomite deposit at Copco No. 1 Reservoir; and (2) the Hornbrook Formation. The diatomite deposit is determined to be of Low Paleontologic Potential. The fossils in the Hornbrook Formation are documented to include megafossils and microfossils, but it is not known if the fossil abundance varies spatially



within this geologic unit. The Klamath River cuts across the Hornbrook Formation in the region of Hornbrook, California, along approximately three river miles (Figure 3.13-2). Sub-units within the Hornbrook formation are described in Section 3.14.2 [*Paleontologic Resources*] *Environmental Setting*. Section 3.14.2 also includes consideration of major past or ongoing projects that have impacted, or currently impact, paleontologic resources.

This cumulative impact analysis focuses on the potential impacts of the Proposed Project combined with other closely related projects that are not already considered in the analysis of paleontologic resource area effects (Section 3.13). Non-project activity types within the paleontologic Area of Analysis with the potential for significant cumulative paleontologic impacts are included in Table 3.24-1.

Significance criteria for cumulative geology and soils impacts are the same as defined in Section 3.13.3 [*Paleontologic Resources*] *Significance Criteria*.

#### **Potential Cumulative Impact 3.24-48 Long-term paleontologic resources effects from the Proposed Project in combination with other non-project activities.**

The Hornbrook Formation is classified as Low Paleontological Potential in Potential Impact 3.13-1, and river discharges during the Proposed Project drawdown would have a low likelihood of downcutting or erosion of the Hornbrook Formation. Thus, there would be no significant impact of the Proposed Project on paleontologic resources. As there are no closely related projects that would, in combination with the Proposed Project, result in cumulative flood hydrology impacts (see Section 3.24.6 *Cumulative Flood Hydrology Effects*) there would be no cumulative downcutting and erosion impacts related to altered flood flows within the Klamath River. No other mining, infrastructure, or restoration projects that would involve excavation into the Hornbrook Formation have been identified (Table 3.24-1). As the Proposed Project would have no significant impact on paleontologic resources, and there are no closely related projects that would have a significant and adverse impact on paleontologic resources, there would be no cumulative impact from the Proposed Project in combination with other projects identified above.

#### **Significance**

*No significant cumulative impact*

#### **3.24.14 Land Use and Planning**

The Area of Analysis for land use and planning is defined as the Project Boundary, including the Limits of Work and Parcel B lands (Figure 2.2-5).

Existing conditions for land use and planning are as described in Section 3.14.2 [*Land Use and Planning*] *Environmental Setting*. PacifiCorp owns the majority of the land within the Project Boundary (Figure 2.2-5), BLM manages 59.3 acres within the Proposed Project area, and most of the land surrounding Copco No. 1 Reservoir is privately owned. The majority of the Area of Analysis for land use and planning is categorized as Open Space – Natural Resources, which includes activities such as timber production, grazing land, and developed and dispersed recreational uses. Public lands are managed by BLM, USDA Forest Service, and other agencies. In the Area of Analysis for this resource, there are residential developments along portions of the Copco No. 1 Reservoir. There are commercial and industrial developments in some

rural areas downstream from Iron Gate Dam. Copco No. 1 Dam, Copco No. 2 Dam, Iron Gate Dam, and Fall Creek facilities are described in Section 3.14.2 [*Land Use and Planning*] *Environmental Setting*. Downstream from Iron Gate Dam are several rural developments located along the Klamath River shoreline. Section 3.14.2 [*Land Use and Planning*] *Environmental Setting* includes consideration of major past or ongoing projects that have impacted, or currently impact, land use resources.

This cumulative impact analysis focuses on the potential impacts of the Proposed Project combined with other closely related projects that are not already considered in the analysis of land use and planning resource area effects (Section 3.14). Non-project activity types within the land use and planning Area of Analysis with the potential for significant cumulative land use and planning impacts are included in Table 3.24-1.

Significance criteria for cumulative aquatic resources impacts are the same as defined in Section 3.14.3 [*Land Use and Planning*] *Significance Criteria*.

**Potential Cumulative Impact 3.24-49 Short-term or long-term physical division of communities from the Proposed Project in combination with other potential non-project activities.**

The Proposed Project would not physically divide an established community by interrupting road access for supplies and services (Potential Impact 3.14-1). Although installation of livestock exclusion fencing is included in the Proposed Project, fencing would only be placed where grazing land abuts planned reservoir restoration areas and would be installed to replace the existing function of the Lower Klamath Project reservoirs as natural barriers (Potential Impact 3.14-1). No other projects have been identified within the Area of Analysis that could create an adverse physical division that interrupts supplies and services. Although there are agricultural projects identified in Table 3.24-1, none of them are within the Area of Analysis for land use and planning, and most are situated farther downstream. Some restoration projects are potentially within the Area of Analysis for land use and planning, including: the Klamath Basin Restoration Program projects and the Mid Klamath Coho Rearing Habitat Enhancement Project; however, these restoration projects do not specify that they would include riparian fencing. Forest and wildfire management projects that create fuel breaks, and road repair and construction projects, could both have beneficial cumulative effects by creating new roads. As the Proposed Project would not have a significant adverse impact on the physical division of communities, and there are no closely related projects that would, in combination with the Proposed Project, have a significant and adverse impact, there would be no cumulative physical division impacts due to the Proposed Project and other closely related projects.

**Significance**

*No significant cumulative impact*

**Potential Cumulative Impact 3.24-50 Short-term or long-term land use resources effects from the Proposed Project in combination with other non-project activities.**

The Proposed Project does not conflict with any land use plan, policy, or regulation, nor any Habitat Conservation Plan (HCP) or Natural Community Conservation Plan (NCCP) (Potential Impact 3.14-2). Other closely related, reasonably foreseeable projects would be subject to their own planning processes to assess conflicts with adopted plans, policies, and regulations. There is no identified potential for a significant cumulative impact due to conflict with plans, policies, regulations, HCPs, or NCCPs. As the

Proposed Project would not have a significant adverse impact on land use, and there are no closely related projects that would, in combination with the Proposed Project, have a significant and adverse impact, there would be no cumulative land use impacts due to the Proposed Project and other closely related projects.

### Significance

*No significant cumulative impact*

#### 3.24.15 Agriculture and Forestry

For agricultural and forestry resources, the Area of Analysis includes all lands within the Project Boundary (Figure 2.2-5), plus a half-mile buffer around Copco No. 1 Reservoir (Figure 3.15-1).

Existing conditions for agriculture and forestry resources are as described in Section 3.15.2 [*Agriculture and Forestry Resources*] *Environmental Setting*. Most of the land in the Area of Analysis is classified by the DOC as Grazing Land, with a small area of Unique Farmland located approximately two miles south of Copco No. 1 Reservoir (Figure 3.15-1). Parcels zoned by Siskiyou County for Agriculture-Grazing are located within the Area of Analysis to the north and south of Copco No. 1 Reservoir (Figure 3.14-1). There are a number of parcels located immediately upstream of Copco No. 1 Reservoir that are used primarily for grazing and hay production. The DOC (2016c) identified these lands as Prime Farmland or Farmland of Statewide Importance (Figure 3.15-1). No Williamson Act parcels nor lands zoned Forest Resources under the Siskiyou County General Plan occur within the Area of Analysis. Section 3.15.2 [*Agriculture and Forestry Resources*] *Environmental Setting* includes consideration of major past or ongoing projects that have impacted, or currently impact, agriculture and forestry resources.

This cumulative impact analysis focuses on the potential impacts of the Proposed Project combined with other closely related projects that are not already considered in the analysis of agriculture and forestry resource area effects (Section 3.15). Non-project activity types within the agriculture and forestry Area of Analysis with the potential for significant cumulative impacts are included in Table 3.24-1.

Significance criteria for cumulative agricultural and forestry impacts are the same as defined in Section 3.15.3 [*Agriculture and Forestry*] *Significance Criteria*.

#### **Potential Cumulative Impact 3.24-51 Short-term and long-term effects to agricultural resources from the combination of the Proposed Project and agricultural and rezoning projects.**

The Proposed Project includes the transfer of PacifiCorp lands immediately surrounding the Lower Klamath Project ("Parcel B lands") from PacifiCorp to the KRRC prior to dam removal, and then to the respective states (i.e., California, Oregon), as applicable, or to a designated third-party transferee, following dam removal (Section 2.7.11 *Land Disposition and Transfer*). The Parcel B lands would thereafter be managed for public interest purposes, which could include: open space, active wetland and riverine restoration, tribal mitigation, river-based recreation, grazing, and potentially other uses. It is speculative to determine which land uses would occur in any particular place, or over what area, on the Parcel B lands.

Most agricultural projects occurring in the Klamath Watershed are reauthorizations of existing activities (Table 3.24-1), thus are captured by the Proposed Project existing conditions. However, zone changes are currently in-process to support additional agricultural land uses (on previously non-agricultural zoned land), including the Cannaworx Zone Change and Kidder Creek Orchard Camp Zone Change, both in Siskiyou County. Modifications to policies for agricultural zones to support pastured hog and poultry operations, as well as agritourism, are also underway in Siskiyou County (Table 3.24-1). The Kidder Creek Orchard Camp Zone Change is situated outside of the Area of Analysis. The adopted Cannaworx Zone Change is within the Area of Analysis near Humbug; it will convert Open Space to Non-Prime Agricultural zoned land, thus supporting agricultural activities on previously agriculture-free land. This would have a beneficial effect on the agricultural resource. As the Proposed Project would not have a significant adverse impact on agricultural resources, and there is only one closely related (beneficial) non-project action, there would be no significant cumulative agricultural impacts due to the Proposed Project.

#### Significance

*No significant cumulative impact*

**Potential Cumulative Impact 3.24-52 Short-term and long-term effects to forestry resources from the combination of the Proposed Project and forest and wildfire management.**

The Proposed Project would have no significant impact on forest lands (Potential Impacts 3.15-2, 3.15-3, and 3.15-4 [*Agriculture and Forestry Resources*]). Non-project activities relating to forest health and fuels management (Table 3.24-1) are proposed in the Klamath Basin, which would result in benefits to forestry resources by reducing the potential for catastrophic stand-replacing wildfire and faster late-successional timber development. However, these projects are not proposed within the agriculture and forestry Area of Analysis. As the Proposed Project would not have a significant adverse impact on forestry resources, and there are no closely related forest or wildfire management projects that would, in combination with the Proposed Project, have a significant and adverse impact, there would be no significant cumulative forestry resource impacts.

#### Significance

*No significant cumulative impact*

**Potential Cumulative Impact 3.24-53 Short-term and long-term effects to forestry resources from the combination of the Proposed Project wildfire.**

As mentioned above, the Proposed Project would have no significant impact on forest lands (Potential Impacts 3.15-2, 3.15-3, and 3.15-4 [*Agriculture and Forestry Resources*]). Wildfires regularly occur within the Klamath Basin, with multiple fires occurring in 2016 through 2018 (Table 3.24-1). Under climate change, forests will be more susceptible to extreme wildfires, with an almost 50 percent increase in the frequency of extreme wildfires that burn over approximately 25,000 acres, and a 77 percent increase in the average area burned statewide by the end of the century (Bedsworth et al. 2018). Large fires can burn hundreds to thousands of acres; for example, in 2016, 844 acres were burned in Siskiyou County. That said, wildfires are a natural occurrence in California and low-burning fires can improve forest health. Given that the Proposed Project would not have significant impacts on forest lands, there would be no significant cumulative impact to forests when the Proposed Project is

considered together with substantial changes that would result if a wildfire were to occur in the Area of Analysis.

### Significance

*No significant cumulative impact*

#### 3.24.16 Population and Housing

The Area of Analysis for population and housing extends beyond the Project Boundary (Figure 2.2-5) to encompass the following urban and rural communities in California: the community of Hornbrook, the City of Yreka, and the residential rural areas near Copco No.1, Copco No. 2, and Iron Gate reservoirs. Existing conditions for population and housing are described in Section 3.16.2 [*Population and Housing*] *Environmental Setting*. Within the population and housing Area of Analysis, there are approximately 12 residences proposed for demolition that are currently owned by PacifiCorp and are for use by workers maintaining the dams or other PacifiCorp properties. Section 3.16.2 [*Population and Housing*] *Environmental Setting* presents Siskiyou County census data, along with data for Yreka and Hornbrook, and considers major past or ongoing projects that have impacted, or currently impact, population and housing resources.

This cumulative impact analysis focuses on the potential impacts of the Proposed Project combined with other closely related projects that are not already considered in the analysis of population and housing resource area effects (Section 3.16). Non-project activity types within the population and housing Area of Analysis with the potential for significant cumulative population and housing impacts are included in Table 3.24-1.

The nature of the above-listed projects is that they could increase population growth and create housing demand, especially during construction periods when additional workers would be present.

Significance criteria for cumulative aquatic resources impacts are the same as defined in Section 3.16.3 [*Population and Housing*] *Significance Criteria*.

#### **Potential Cumulative Impact 3.24-54 Short-term and long-term population and housing effects from the Proposed Project in combination with residential and industrial development projects.**

The potential effects of the Proposed Project on unplanned population growth would be limited to the temporary influx of workers required for dam removal construction activities and would have no significant impact (Potential Impact 3.16-1). Similarly, the potential effects of the Proposed Project on the displacement of people or housing is limited to the need for an additional temporary worker population during construction activities, and their potential housing needs, and there would be no significant impact (Potential Impact 3.16-2). No large-scale residential development projects have been identified within the vicinity of the Proposed Project. It is possible that other construction projects would attract workers to the area at a similar time, such as the Sousa Ready Mix Concrete Batch Plant Project in Yreka, development of Siskiyou County jail in Yreka, a nanocellulose facility development in Yreka, as well as restoration projects, road repair and construction, mining, and telecommunications projects (Table 3.24-1). The combined impact of the Proposed Project and these other reasonably foreseeable future projects that could attract workers to the area would be a less than significant impact with respect to unplanned population growth or the need for replacement housing at the

County-wide level due to the large (>4,000) number of vacant units available for use (Potential Impact 3.16-1). Within the City of Yreka, the cumulative impact on unplanned population growth or the need for replacement housing has potential to be significant and adverse if other development projects occur concurrently with the Proposed Project and a substantial number of workers from outside of Yreka converge on the city. However, given that the temporary population increase due to the Proposed Project would be small (0.4 percent) (Potential Impact 3.16-2), and most workers for the Proposed Project are anticipated to be sourced from Yreka and smaller nearby communities, the Proposed Project's use of vacant units would be minimal, and the incremental impact on population and housing would not be cumulatively considerable.

### Significance

*No significant cumulative impact at the County-wide level*

*Not cumulatively considerable for the City of Yreka*

### 3.24.17 Public Services

The Area of Analysis for public services includes the immediate vicinity of Copco No. 1, Copco No. 2, and Iron Gate dams, including their associated reservoirs, and areas identified as construction/demolition and staging areas. The Area of Analysis for public services also includes communities in the immediate vicinity of the Proposed Project, lands managed for public use by the USDA Forest Service and the BLM, and routes utilized for providing public services. Recreation, roads, fire hazards, and energy production are discussed in this section only in terms of their relationship to analysis of public services.

Existing conditions for public services are described in Section 3.17.2 [*Public Services Environmental Setting*], which describes fire protection, police, medical services, schools, parks, and other public facilities within the Area of Analysis. Fire protection in the Area of Analysis is provided via cooperative fire protection agreement with CALFIRE. Police services are provided by The Siskiyou County Sheriff's Department and the California Highway Patrol. There are no medical services provided directly within the Area of Analysis. The nearest medical facilities are located in Klamath Falls, OR, Ashland, OR, Dorris, CA, and Yreka, CA. Dispatch services for emergencies are provided by the Yreka Communications Center. Bogus Elementary School is the closest school to the public services Area of Analysis. It is located 5.3 miles from Copco No. 1 Reservoir. As described in Section 3.20 *Recreation*, the Area of Analysis contains a number of recreational facilities, including the reservoirs associated with the Lower Klamath Project. Section 3.17.2 [*Public Services Effects Environmental Setting*] includes consideration of major past or ongoing projects that have impacted, or currently impact, public services.

This cumulative impact analysis focuses on the potential impacts of the Proposed Project combined with other closely related projects that are not already considered in the analysis of public services resource area effects (Section 3.17). Non-project activity types within the Area of Analysis with the potential for significant cumulative effects were considered in relation to the potential project impact types evaluated in Section 3.17.5 [*Public Services Potential Impacts and Mitigation*], including:

- Construction and demolition activities that could increase response times or increase the need for police and medical services;
- Increased risk of wildfires and the need for firefighting measures or resources;
- Changes in long-term water source availability for wildfire fighting; and
- Potential effects to parks and other public facilities.

**Potential Cumulative Impact 3.24-55 Short-term and long-term public services effects from the Proposed Project in combination with non-project activities.** The Proposed Project could result in a significant short-term impact if it resulted in substantial increased emergency response times within the Area of Analysis. Other projects and activities that could potentially impact emergency response times include multiple thinning and forest fuel reduction projects in the Happy Camp, Oak Knoll, Salmon River, Scott River, and Goosenest Ranger Districts of the Klamath National Forest, the Brooks Mine, fiber optic cable installation along Highway 96, PacifiCorp powerline replacement in the Happy Camp Ranger District, Guys Gulch Road Realignment, Wooley Creek Bridge Rehabilitation, KHSA (IM)-16 Water Diversion Projects, and construction of the Yreka Nanocellulose Facility, Siskiyou County Jail, Rain Rock Casino, Sousa Ready Mix Concrete Batch Plant, and the Fruit Growers Supply Company Sawmill (Table 3.24-1). These projects are unlikely to overlap in space and time with the Proposed Project's potential impacts to public services response times or emergency service routes, with the exception of KHSA (IM)-16 Water Diversion Projects and the Yreka Nanocellulose Facility, Siskiyou County Jail, Rain Rock Casino, Sousa Ready Mix Concrete Batch Plant, and Fruit Growers Supply Company Sawmill projects. If these projects occur at the same time as the Proposed Project, they could add to the increased emergency response times from the Proposed Project described as Potential Impact 3.17-1. Although the Emergency Response Plan, Fire Management Plan, Traffic Management Plan (TMP), and Hazardous Materials Management Plan to be prepared per Mitigation Measures HZ-1 and Recommended Measure TR-1 would take into account any other construction projects occurring at the same time that could potentially slow emergency services access in the affected area, the State Water Board cannot ensure the TMP's and Emergency Response Plan's implementation. As with Potential Cumulative Impact 3.24-65, the combination of the Proposed Project, measures HZ-1 and TR-1, and one or more other construction projects within the Area of Analysis would be unlikely to result in significant impacts to traffic and transportation. However, because the State Water Board has determined that short-term construction-related impacts of the Proposed Project would be significant and unavoidable with respect to traffic flow, road safety, road conditions, emergency access, public transit, and non-motorized transportation, unless and until KRRC reaches enforceable 'good citizen' agreements through the FERC process, it has determined the incremental contribution of the Proposed Project in this Draft EIR to be cumulatively considerable.

The Proposed Project could result in effects to public services via environmental incidents and accidents that could add additional burden to fire protection, police, medical services, schools, parks, and other public facilities (Potential Impact 3.17-1). The Campora Propane project in Yreka and Pacific Connector Gas Pipeline in Oregon (Table 3.24-1) are in development and may present such risks, but are a substantial distance from the Proposed Project, such that they are not expected to cause significant impacts in the Area of Analysis in the unlikely event that an environmental incident or accident occurred. Additionally, the Pacific Connector Gas Pipeline would be not be

transporting gas in liquified form. Therefore, the cumulative impact would not be significant.

The Proposed Project could expose people or structures to a risk of loss, injury, or death involving wildland fires by reducing reservoir storage (Potential Impact 3.17-2, and Potential Cumulative Impact 3.21-8). 2017 court-ordered flushing and emergency dilution flows could change flows from upstream of the Proposed Project and affect the volume of water available for firefighting in the Area of Analysis, and the timing of the 2017 flows is likely to have a beneficial effect during wildfire season. Although changes to flow management may occur in the future, no other projects identified in Table 3.24-1 would reduce reservoir water storage. USDA Forest Service wildfire fuel reduction projects on National Forest land such as the Six Shooter Project are intended to reduce the risk of catastrophic fire. Therefore, the cumulative impact is not significant.

No project or non-project activity types within the area of analysis that could potentially effect school services and facilities (Potential Impact 3.17-3) overlap in type, location, or time with anticipated Proposed Project impacts; therefore, there would be no cumulative impact to public services related to school services and facilities.

#### Significance

*Cumulatively considerable* in the short term

*No significant cumulative impact* in the long term

#### 3.24.18 Utilities and Service Systems

The Area of Analysis for utilities and service systems consists of lands within the Project Boundary (Figure 2.2-4), plus consideration of disposal capacities for accommodating solid wastes at the Yreka Transfer facility near Hornbrook, CA, the Class 1 Landfill near Anderson, CA, and the Dry Creek landfill site in White City, OR. These areas could potentially experience utility and service effects from the Proposed Project. Potential cumulative impacts to wastewater and stormwater would be limited to lands within the Project Boundary. Potential cumulative impacts of short-term waste export are also addressed in Section 3.24.21 [*Cumulative Effects*] *Hazards and Hazardous Materials* and Section 3.24.22 [*Cumulative Effects*] *Transportation and Traffic*. Potential cumulative impacts to water supply are addressed in Section 3.24.8 *Cumulative Effects* [*Water Supply/Water Rights*].

Existing conditions for wastewater, stormwater, and solid waste systems are described in Section 3.18.2 [*Utilities and Service Systems*] *Environmental Setting*.

The City of Yreka's wastewater treatment plant treats domestic and industrial sewage generated within the city's boundaries (City of Yreka 2017). Communities in unincorporated Siskiyou County either operate community wastewater treatment systems, on-site septic systems, or use an adjacent city's wastewater treatment facilities (USBR 2012). Recreational facilities located along the shoreline of Project reservoirs have vault toilets. No municipal stormwater systems are located within the Area of Analysis for utilities and service systems. Stormwater captured by impervious surfaces at existing Project facilities and within Hornbrook and Copco Village is conveyed by and to natural drainages (FERC 2004).



The Area of Analysis is not served by any water district. Water supplies are provided to rural residences near the Lower Klamath Project facilities by private wells (USBR 2012). The Proposed Project site is within the jurisdictional boundaries of the Siskiyou County Integrated Solid Waste Management Regional Agency, which operates five solid waste recycling and transfer sites (CalRecycle 2017a, Siskiyou County 2017b). Section 3.18.2 [Utilities and Service Systems] Environmental Setting includes consideration of major past or ongoing projects that have impacted, or currently impact, utilities and service systems.

This cumulative impact analysis focuses on the potential impacts of the Proposed Project combined with other closely related projects that are not already considered in the analysis of utilities and service systems resource area effects (Section 3.18). The following project types were considered:

- Large-scale construction projects;
- Large-scale demolition projects;
- Industrial development projects;
- Community development projects; and
- Large-scale residential subdivisions.

#### **Potential Cumulative Impact 3.24-56 Short-term and long-term utilities and service system effects from the Proposed Project in combination with non-project activities.**

The Proposed Project proposes to dispose of solid waste at the County transfer station located at the former landfill site on Oberlin Road, two miles southeast of Yreka, California, which is the nearest transfer station that could be used for recycling and waste disposal/transfer during dam demolition. The transfer station is permitted to accept general residential, commercial, and industrial refuse for disposal. The Yreka Transfer Facility has a capacity of 100 tons per day. Currently, solid waste is transferred to the Dry Creek Landfill near White City Oregon. In 2018, this landfill had a total capacity of 76,800,000 tons with a life projected at over 100 years (Dry Creek Landfill, 2018).

Hazardous materials must be disposed at certified Class I landfill facilities, which are lined to prevent the contamination of underlying soils and groundwater. The Anderson Landfill in Anderson, California, is located 122 miles south of Hornbrook, California, and is permitted to accept hazardous waste. The Anderson Landfill had an estimated remaining capacity of 11,914,025 cubic yards (72 percent of capacity remaining) in 2008, with an anticipated closure date of 2055 (CalRecycle 2017a). Estimated quantities of solid waste from the Proposed Project are described in Section 2.7.1 *Dam and Powerhouse Deconstruction*, as well as in the Definite Plan (Appendix B: *Definite Plan – Tables 5.3-3, 5.4-3 and 5.5-3*). Solid waste volumes from the Proposed Project would be within the limitations noted above (Potential Impacts 3.18-3 and 3.18-4). The expansion of the Kidder Creek Orchard Camp, the opening of the Siskiyou County Jail, Trinity County Jail, and Rain Rock Casino, and the potential demolition of the Ringe Pool Facility (Table 3.24-1) have the potential to increase solid waste contributions to regional landfills. The landfills described above are expected to have the capacity to accept solid waste from these projects as well as from the Proposed Project.

The Proposed Project would not have significant impacts associated with the construction of new wastewater and/or stormwater treatment facilities, or expansion of existing facilities (Potential Impacts 3.18-1 and 3.18-2). Large non-project construction activities would be required to obtain coverage individually under the Statewide Construction General Permit (CGP), requiring applicants to address erosion and sediment control, stormwater, spill prevention and containment, and site cleanup. No non-project activity types within the Area of Analysis that could potentially effect wastewater or stormwater would overlap in type, location, or time with anticipated impacts due to the Proposed Project; therefore, there would be no significant cumulative impact associated with wastewater or stormwater services.

As the Proposed Project would not have a significant adverse impact on utilities and service systems, and there are no closely related projects that would, in combination with the Proposed Project, have a significant and adverse impact, there would be no significant cumulative utilities and service systems impacts.

### Significance

*No significant cumulative impact*

#### 3.24.19 Aesthetics

The Area of Analysis for aesthetics is the Klamath River from the Oregon-California state line to the Klamath River Estuary. The Primary Area of Analysis for aesthetics is within the viewshed of the Lower Klamath Project reservoirs, which includes the proposed Limits of Work in California (i.e., Copco No. 1, Copco No. 2, and Iron Gate dams, reservoirs, and associated facilities, and the areas identified as construction/demolition areas and staging areas), plus a buffer to the ridgeline of surrounding the reservoirs (Figure 3.19-1).

Existing conditions for aesthetics are defined in Section 3.19.2 [*Aesthetics*] *Environmental Setting*. The Area of Analysis for aesthetic resources contains BLM VRM Class III visual resources, for which the objective is to retain the existing character of the landscape, with only moderate change from a project such as the Proposed Project. The variety of color, vegetation, landforms, adjacent scenery, scarcity, cultural modifications, and the presence of water within the Area of Analysis leads to a BLM Class A (distinctive inherent scenic attractiveness) classification for scenic quality. The Area of Analysis also has a High BLM visual sensitivity classification, meaning the public seeks a high level of visual quality in the landscape, and a foreground-midground distance zone classification. Additionally, Klamath River components are part of the National (and state) Wild and Scenic Rivers (WSR) System, because of their free-flowing condition and “outstandingly remarkable” values. The “State of Jefferson” National Forest Scenic Byway, and “Bigfoot” National Forest Scenic Byway are also situated within the Area of Analysis. Section 3.19.2 [*Aesthetics*] *Environmental Setting* includes consideration of major past or ongoing projects that have impacted, or currently impact, aesthetics resources.

This cumulative impact analysis focuses on the potential impacts of the Proposed Project combined with other closely related projects that are not already considered in the analysis of utilities and service systems resource area effects (Section 3.18).

This cumulative impact analysis focuses on the impact of the Proposed Project and other projects that are not already considered in the analysis of aesthetics resource area effects (Section 3.19) due to actions and elements included in the Proposed Project (Section 2). Non-project activity types within the aesthetics Area of Analysis with the potential for significant cumulative land use and planning impacts include (Table 3.24-1):

- Large-scale construction projects;
- 2017 court-ordered flushing and emergency dilution flows, or other hydrological impacts that change flow characteristics, open water conditions, channel morphology, or turbidity;
- Water discharges that visually affect water quality;
- Riverine restoration projects;
- Changes or removal of historic structures;
- Near-channel infrastructure projects (i.e., bridges, culverts); and
- Large-scale infrastructure projects.

Significance criteria for cumulative aquatic resources impacts are the same as defined in Section 3.19.3 [*Aesthetics*] *Significance Criteria*.

**Potential Cumulative Impact 3.24-57 Short-term and long-term scenic vista effects from the loss of open water from the Proposed Project in combination with other non-project activities.**

The Proposed Project would have no significant impact from the loss of open water vistas, because open water and lake vistas would be altered in favor of more natural river, canyon, and valley vistas, there are numerous open-water lakes in the region, and visual quality for the public would not be substantially degraded (Potential Impact 3.19-1). No other projects that would result in loss of open water have been identified (Table 3.24-1), thus there would be no significant cumulative impacts to scenic vistas due to the Proposed Project and other closely related projects.

#### Significance

*No significant cumulative impact*

**Potential Cumulative Impact 3.24-58 Short-term and long-term scenic resources effects from the Proposed Project in combination with restoration, flow enhancement, and water quality improvement projects, and other non-project activities.**

The Proposed Project could affect flow characteristics within sections of Klamath River classified as WSR. Potential changes to flow characteristics include the timing, duration, and magnitude of flows, which can affect channel morphology; however, the Proposed Project would have flow characteristics that are visually similar to existing conditions and visual impacts related to changes of river channel morphology would not be significant (Potential Impact 3.19-2). Other projects (Table 3.24-1) have the potential to alter river channel morphology and result in a cumulative impact. Potential Impact 3.24-1 in Section 3.24.2 *Cumulative Water Quality Effects* provides background and context regarding agency re-consultation on the 2013 BiOp, and Potential Impact 3.24-24 provides a summation of the approach taken in this document. As for Potential Impact 3.24-24, the 2017 court-ordered flushing flows are the focus of this analysis. Surface and deep flushing flows would reflect a more natural regime, thus could have either no

impact or beneficial effects to river channel morphology in combination with the Proposed Project.

The Proposed Project would result in significant and unavoidable short-term changes in water quality due to elevated suspended sediment concentrations during reservoir drawdown (Potential Impact 3.2-3); however, the visual quality (water clarity) impact from this would not be a significant impact as the contrast is expected to be weak to moderate (i.e., not a visually noticeable change from existing conditions for most of the drawdown period) and spatially limited (decreasing downstream) (Potential Impact 3.19-3). While there may be an increase in the duration of elevated suspended sediment concentrations in water years when the Proposed Project reservoir drawdown flows do not meet the surface and/or deep flushing flow requirements and the 2017 court-ordered flushing flows are still required to occur until either April 30 (surface flushing flows) or May 31 (deep flushing flows) (see Potential Cumulative Impact 3.25-1 for more details); reduced clarity conditions would be of short duration (i.e., 24 to 72 hours) and spatially limited. Overall, there would not be a short-term cumulative visual quality impact due to the Proposed Project and the 2017 court-ordered flushing flows.

In the long term, the beneficial reductions of seasonal nuisance algae blooms would have no impact on aesthetics (Potential Impact 3.18-3). The 2017 court-ordered flushing flows would improve management of *C. Shasta*, which could have adverse visual water quality outcomes if left uncontrolled. Similarly, other restoration projects occurring within the Klamath Watershed, such as the Long-Term Plan to Protect Adult Salmon in the Lower Klamath River, would reduce nutrients and thus the prevalence of seasonal algae blooms (Table 3.24-1). The Proposed Project, in combination with riverine restoration projects, would have beneficial effects on visual water quality.

### Significance

*No significant cumulative impact*

**Potential Cumulative Impact 3.24-59 Short-term and long-term visual character and quality effects from the Proposed Project in combination with other ground disturbing and construction activities.**

The Proposed Project would potentially impact the visual character and quality of the site and its surroundings. Substantial areas of bare sediment and rock would be exposed in previously inundated areas after reservoir drawdown and dam removal, and would remain exposed until vegetation establishes, which would result in a significant impact in the short term (Potential Impact 3.19-4). Existing wetland vegetation on the reservoir shorelines may also die. Other closely related activities that could cause a similar change in visual character within the Lower Klamath Project reservoir footprints include mining and near-channel infrastructure. However, no reasonably foreseeable projects involving such activities within the reservoir footprints have been identified (Table 3.24-1); therefore, there would be no cumulative impact.

Replacement of the Yreka water supply pipeline, bridges, culverts, roads, and recreational facilities would result in minor visual changes compared to existing conditions, which would not constitute a significant short-term or long-term impact (Potential Impacts 3.19-5 and 3.19-6). Although there are other projects of this nature within the Klamath Basin, none of them are within the aesthetics Area of Analysis; therefore, the combination of the Proposed Project and other construction-related projects would not result in a significant cumulative visual impact.

The Proposed Project involves the removal of historic structures (Copco No. 1 Hydroelectric Powerhouse and Dam; Copco No. 2 Hydroelectric Powerhouse; and Copco No. 2 Wooden Stave Penstock) (Potential Impact 3.19-5). Separate from the Proposed Project, no other historic structures have recently been removed, or are known to be planned for removal, in the aesthetics Area of Analysis (Table 3.24-1). Thus, there would be no significant cumulative scenic historic resource impact resulting from the Proposed Project and other closely related projects.

Additionally, there would be potential short-term impacts to visual character and quality due to Proposed Project construction activities, including the presence of vehicles and equipment, temporary structures, temporary access roads, equipment storage, stockpiles, and demolition. The Proposed Project would have temporary weak to strong visual contrasts associated with construction activities and would generate dust, but most nearby recreational facilities with views of the construction site would be closed for the duration of the construction period, thus the impact would not be significant (Potential Impact 3.19-6). Although it is possible that there would be small-scale construction activities within the Area of Analysis at the same time as the Proposed Project, no overlapping large-scale construction projects are anticipated that would, in combination with the Proposed Project, result in reasonably foreseeable significant and adverse aesthetics impacts. Thus, there would be no cumulative aesthetics impacts due to the construction activities associated with the Proposed Project.

#### Significance

*No significant cumulative impact*

#### **Potential Cumulative Impact 3.24-60 Short-term light and glare effects from the Proposed Project in combination with other construction projects.**

Temporary lighting would be erected for nighttime construction activities under the Proposed Project, and security lighting may be required during deconstruction (Potential Impact 3.19-7). Although the Proposed Project would result in significant and unavoidable adverse impacts due to construction-related lighting, there are no closely related, spatially and temporally overlapping projects that would, in combination with the Proposed Project, result in further significant and adverse light or glare impacts (Table 3.24-1). Thus, there would be no significant cumulative aesthetics impacts due to short-term lighting and glare under the Proposed Project.

#### Significance

*No significant cumulative impact*

### **3.24.20 Recreation**

The Area of Analysis for recreation includes recreation areas and associated access along the Klamath River corridor from the California-Oregon border to the Klamath River Estuary (Figure 3.20-1).

Existing conditions for recreation are defined in Section 3.20.2 [*Recreation*] *Environmental Setting*. Within the Klamath Basin, there are four national forests (Klamath, Fremont – Winema, Six Rivers, and Modoc), one joint national and state park (Redwood), one national park (Crater Lake), two national monuments (Lava Beds and Cascade – Siskiyou), and five National Wildlife Refuges (NWRs) (Klamath Marsh, Tule

Lake, Clear Lake, Upper Klamath, and Lower Klamath). These areas provide sightseeing, camping, hiking, fishing, wildlife viewing, and other recreational opportunities. Within the Klamath Basin, the Klamath, Scott, Salmon, Sprague, Sycan, Smith, and Trinity rivers, and Wooley Creek have segments classified as having Wild and Scenic values under the WSRA. Additionally, there are extensive public and private recreational opportunities along the Klamath River and within several lakes/reservoirs. Developed recreational facilities, including: Agency Lake, Upper Klamath Lake, the Link River Trail, and the Keno Impoundment/Lake Ewauna, and activity specific recreational resources, are described in Section 3.30.2 *[Recreation] Environmental Setting*. Section 3.20.2 also includes consideration of major past or ongoing projects that have impacted, or currently impact, recreation resources.

This cumulative impact analysis focuses on the potential impacts of the Proposed Project combined with other closely related projects that are not already considered in the analysis of recreation resource area effects (Section 3.20). Non-project activity types within the recreation Area of Analysis with the potential for significant cumulative recreational impacts include (see also Table 3.24-1):

- Development projects, especially large-scale construction;
- Restoration, flow enhancement, and water quality improvement projects ; and
- Water flow changes and whitewater boating.

Significance criteria for cumulative aquatic resources impacts are the same as defined in Section 3.20.3 *[Recreation] Significance Criteria*.

#### **Potential Cumulative Impact 3.24-61 Short-term and long-term recreation effects from the Proposed Project in combination with development projects.**

Proposed Project short-term construction-related impacts on existing recreational opportunities would not be significant (Potential Impact 3.20-1) for the following reasons: a number of reservoirs, lakes, and rivers are present within and adjacent to the Klamath Basin that provide similar recreational opportunities as areas where access would be restricted during Proposed Project construction; several existing recreational sites are located away from where dust and noise would be generated during Proposed Project construction; turbidity impacts would be short-term and primarily during the winter when recreational use for non-contact (e.g., boating) and contact recreation (e.g., swimming and fishing) is relatively low; and water quality and clarity would improve with distance downstream of Iron Gate Dam, as sediments are flushed downstream and into the Pacific Ocean. Although there is potential for other large-scale construction projects in the Klamath Basin to temporally overlap with the Proposed Project, such as the Sousa Ready Mix Concrete Plant and the potential nanocellulose facility, these projects would be located in Yreka (Table 3.24-1). Such projects in Yreka are not close enough to the Proposed Project reservoir footprints and/or the Middle Klamath River immediately downstream of Iron Gate Dam (where turbidity impacts would be greatest) to result in a significant cumulative impact. There may be some overlapping, small-scale construction projects in more proximal locations (Table 3.24-1), but there are no other reasonably foreseeable construction projects that would contribute to a short-term adverse cumulative impact on recreation in the area where the Copco No. 1, Copco No. 2, and Iron Gate dams are proposed for removal (Table 3.24-1). Thus, the Proposed Project, in combination with other construction projects, would not have a significant adverse cumulative impact on recreational opportunities in the Area of Analysis.

The Proposed Project would not have significant long-term impacts on reservoir-based recreation activities (Potential Impact 3.20-2), or substantial or accelerated physical deterioration of other regional facilities (Potential Impact 3.20-3). Under the Proposed Project, Fourmile Lake, Agency Lake, Applegate Reservoir, and Medicine Lake would all continue to provide region-wide open-water activities, some reservoir facilities would remain, and would be upgraded or enhanced where possible, and most existing river access would be retained and upgraded. Steelhead, trout, and salmon fisheries in the Klamath River would be enhanced. Any loss of warm water fishing opportunities is not over a large area and there are other warm water fishing opportunities elsewhere in California and Oregon. No other reasonably foreseeable development projects have been identified in the Area of Analysis for recreation that would remove reservoirs, adversely impact recreational opportunities in other lakes and reservoirs, or reduce warm water fishing opportunities. In the absence of spatially and temporally overlapping development projects, there would be no significant cumulative impacts to reservoir-based recreation or physical deterioration of regional facilities.

#### Significance

*No significant cumulative impact*

#### **Potential Cumulative Impact 3.24-62 Short-term and long-term recreation effects from the Proposed Project in combination with other restoration, flow enhancement, and water quality improvement projects.**

The Proposed Project would improve scenery, recreation, fisheries, and wildlife values (which are values specified in the Wild and Scenic River Act Section 7(a)) on the California Klamath Wild and Scenic River segments (both designated and eligible for listing) (Potential Impact 3.20-7). Other aquatic habitat restoration, flow enhancement, and water quality improvement projects along the Klamath River and its tributaries (see Table 3.24-1) would include placement of off-channel habitat features, floodplain restoration, incorporation of large wood into tributaries to the Klamath River, increases in stream flow, and reduction in water quality pollutants. These types of projects would have a beneficial cumulative effect on recreation associated with wild and scenic values in the long term.

The Proposed Project would be beneficial with respect to the river-based recreational fishing because it would: restore volitional fish passage, improve long-term water quality, likely increase recreational fish species, and implement the Recreation Facilities Plan for the Hydroelectric Reach (Potential Impact 3.20-6). There would be no significant impact to, or loss of, other river-based recreation, for the Middle Klamath River between Iron Gate Dam and Humbug Creek under the Proposed Project, because there is only one structure that is expected to be within the post-dam removal 100-year floodplain that is not in the floodplain under existing conditions (Potential Impact 3.20-6). Other restoration projects (Table 3.24-1) would also improve fisheries by restoring habitat; therefore, the Proposed Project in combination with other restoration projects would be beneficial for recreational fishing.

#### Significance

*Beneficial cumulative effects*

#### **Potential Cumulative Impact 3.24-63 Short-term and long-term whitewater boating effects from the combination of the Proposed Project and water flow changes.**

The Proposed Project would result in a significant adverse impact due to reduction of whitewater boating opportunities in the Hell's Corner river reach (in the upper portion of the Hydroelectric Reach) (Potential Impact 3.20-5). However, with the Proposed Project there would also be an increase in whitewater boating opportunities in the Copco No. 2 Bypass Reach, and there could be improvements in the quality and quantity of whitewater boating opportunities in areas currently inundated by reservoirs. There are no closely related projects (Table 3.24-1) that would, in combination with the Proposed Project, result in further significant and adverse whitewater boating impacts in the Hell's Corner river reach or other reaches of the Klamath River or its tributaries. The 2017 court-ordered flushing flows (interim flows until re-consultation of the 2013 BiOp is completed, see also Potential Cumulative Impact 3.24-1) would increase water flows during relatively short (i.e., 24 to 72 hours) controlled periods (see Potential Cumulative Impact 3.24-1), which could provide periodic benefits to whitewater boaters. No projects have been identified that would substantially reduce flows and result in a significant cumulative impact on whitewater boating opportunities in combination with the Proposed Project (Table 3.24-1).

### Significance

*No significant cumulative impact*

#### 3.24.21 Hazards and Hazardous Materials

The Area of Analysis for hazards and hazardous materials includes the area in the immediate vicinity of Copco No. 1, Copco No. 2, and Iron Gate dams and reservoirs, and areas identified as construction/demolition and staging areas. The Area of Analysis for hazards and hazardous materials also includes routes proposed to be utilized for the transportation of construction debris and equipment.

Existing conditions for hazards and hazardous materials are described in Section 3.21.2 [*Hazards and Hazardous Substances*] *Environmental Setting*, which describes transport/releases of hazardous materials, school proximity, contaminants/contaminated sites, nearby airports, emergency response, and wildfires. Section 3.21.2 [*Hazards and Hazardous Substances*] *Environmental Setting* includes consideration of major past or ongoing projects that have impacted, or currently impact, environmental resources. This cumulative impact analysis focuses on the potential impacts of the Proposed Project combined with other closely related projects that are not already considered in the analysis of hazards and hazardous substances resource area effects (Section 3.21). Non-project activity types within the hazards and hazardous materials Area of Analysis with the potential for significant cumulative impacts include (see also Table 3.24-1):

- Construction or demolition projects involving the transport, use, disposal of emissions, or accidental release of hazardous materials;
- Land use or land management changes involving the transport, use, disposal of emissions, or accidental release of hazardous materials;
- Projects or plans that could impair implementation emergency response or emergency evacuation plans;
- 2017 court-ordered flushing and emergency dilution flows;
- Wildfires; and
- Forest and wildfire management.



**Potential Cumulative Impact 3.24-64 Short-term and long-term hazards and hazardous materials effects from the Proposed Project in combination with non-project activities.**

No non-project activity types within the hazards and hazardous materials Area of Analysis that could be located on a hazardous materials site, projects that could result in a safety hazard within two miles of airports, or that could impair implementation emergency response or emergency evacuation plans (Potential Impacts 3.21-5, 3.21-6, and 3.21-7), would have the potential for significant incremental short- or long-term cumulative impacts related to hazards and hazardous substances because none of these activities would overlap in type, location, or time with anticipated impacts under the Proposed Project.

The Proposed Project could result in substantial exposure for the public or environment to hazards or hazardous materials due to routine transport, use, or disposal of hazardous materials, potential accidental release of hazardous materials, or be located on a hazardous site (Potential Impacts 3.21-1, 3.21-2, and 3.21-3), and would require implementation of Mitigation Measure HZ-1 to reduce potential impacts to less than significant. Although the Campora Propane and Pacific Connector Gas Pipeline projects are in development and may present similar risks, both projects are too distant from the Lower Klamath Project dam complexes in California to cause significant impacts in the Area of Analysis. Thus, there would be no cumulative impact.

The Proposed Project would result in a significant and unavoidable long-term impact due to reduction in reservoir storage for fighting wildland fires (Potential Impact 3.21-8) because the State Water Board cannot ensure the implementation of Recommended Measure PS-1, which would require a Fire Management Plan after reaching agreement with CALFIRE on a long-term water source replacement for helicopter and ground crews (including construction and utilization of proposed dry hydrants, dip ponds or other alternatives). While the effects of new BiOp flow requirements for the Klamath Irrigation Project are speculative, the 2017 flow requirements (i.e., 2013 BiOp Flows plus the 2017 court-ordered flushing and emergency dilution flows) periodically increase the volume of water entering the Hydroelectric Reach and the Middle Klamath River immediately downstream of Iron Gate Dam by requiring 24-hr to 72-hr periods of higher flows into May and June. While this short period of inflow and limited periodicity is not sufficient to be beneficial with respect to fighting wildland fires, the 2017 flow requirements would not reduce the volume of water available for firefighting during the spring and early summer months (see also Potential Cumulative Impact 3.24-1) and there would be no cumulative impact to water supply. Although changes to flow management in the Hydroelectric Reach and the Middle Klamath River may occur in the future, no other reasonably foreseeable projects identified in Table 3.24-1 would reduce flows or water storage in the Hydroelectric Reach. Further, wildfire fuel reduction projects, including the USDA Forest Service projects on National Forest lands (e.g., Six Shooter Project) and firefighting are intended to reduce the risk of catastrophic fire. Therefore, the cumulative effects of the Proposed Project, when combined with the USDA Forest Service or any other wildfire fuel reduction projects, would not be significant in regard to wildfire ignition risk. As discussed above (Potential Cumulative Impact 3.24-25), wildfire itself is a potential hazard, and may occur in Area of Analysis in the future. If a large fire occurs in the Area of Analysis during the construction period for the Proposed Project, work would be suspended due to health and safety reasons (see Potential Cumulative Impact 3.24-34 [Air Quality]); therefore, temporal overlap is unlikely.

### Significance

*No significant cumulative impact* for hazardous materials

*Cumulatively considerable* for firefighting water access

#### 3.24.22 Transportation and Traffic

The Area of Analysis for cumulative transportation and traffic effects encompasses roadways in Siskiyou and Shasta Counties that would be used by construction vehicles and workers and could potentially be affected by the Proposed Project. Table 3.22-1 lists the regional and local roads that access each California site of the Proposed Project (Copco No. 1, Copco No. 2, and Iron Gate dams). These roads include Copco Road, Ager-Beswick Road, Lakeview Road, and California segments of I-5. Equipment hauling and waste disposal for J.C. Boyle Dam would occur only in Oregon (Appendix B: *Definite Plan*).

Existing conditions for transportation resources are described in Section 3.22.2 [*Transportation*] *Environmental Setting*. Roadways in Siskiyou County are generally rural. Most of the private property in the area is undeveloped and/or used as grazing land for cattle, with the exception of several small communities in the vicinity of Copco No. 1 and Iron Gate reservoirs. With the exception of Interstate 5, roads in the Area of Analysis are one- or two-lane collector or local rural roads. Level of Service (LOS) conditions on Interstate 5 are currently at LOS A, which indicates free flow of traffic. The major access roadways in the Area of Analysis that are likely to be affected by Proposed Project-related traffic are also currently at LOS A (Greendot 2016). Surveys conducted in 2017 identified several roadways, bridges and culverts that are not structurally competent to withstand construction-related traffic. Section 3.22.2 [*Transportation and Traffic Effects*] *Environmental Setting* includes consideration of major past or ongoing projects that have impacted, or currently impact, transportation and traffic resources.

This cumulative impact analysis focuses on the potential impacts of the Proposed Project combined with other closely related projects that are not already considered in the analysis of transportation and traffic resource area effects (Section 3.22). Non-project activity types within the Area of Analysis with the potential for significant cumulative effects when combined with the Proposed Project were considered in relation to the potential impact types evaluated in Section 3.22.5 [*Transportation and Traffic*] *Potential Impacts and Mitigation*. These include activities that could create potential impacts to traffic flow, road safety, road conditions, emergency access, public transit, and non-motorized transportation by either temporarily increasing traffic volume or impeding traffic flow. The non-project activity types (plus wildfires) include the following (see also Table 3.24-1):

- Forest and wildfire management;
- Construction projects;
- Restoration projects; and
- Road repair.

**Potential Cumulative Impact 3.24-65 Short-term and long-term traffic and transportation effects from the Proposed Project in combination with non-project activities.**

As described in Section 3.22.5 [*Transportation and Traffic*] *Potential Impacts and Mitigation*, the Proposed Project would result in significant and unavoidable short-term impacts to traffic flow, road safety, road conditions, emergency access, public transit, and non-motorized transportation, unless and until KRRC reaches enforceable 'good citizen' agreements that are finalized and implemented through the FERC process and that include proposed items for the final TMP and Emergency Response Plan (Appendix B: *Definite Plan – Appendices O1 through O4*), as well as the additional components included in Recommended Measure TR-1 (Potential Impacts 3.22-1 through 3.22-5).

The Proposed Project is not located within two miles of an airport nor would it result in a change in air traffic patterns that would result in a substantial safety risks (Potential Impact 3.22-6). Therefore, there would be no cumulative impacts related to air traffic due to the Proposed Project in combination with non-project activities within the traffic and transportation Area of Analysis.

It is possible that some riverine restoration projects, such as projects under the Klamath Basin Restoration Program, forest and wildfire management projects, and road repair projects, could overlap temporally, but they are unlikely to occur close enough to Proposed Project construction areas to contribute to a cumulative impact. The closest known forest and wildfire management projects are not within the Area of Analysis for transportation and traffic (i.e., *Somes Bar Integrated Fire Management Project*; approximately 90 miles downstream of Humbug, and *Crawford Vegetation Management Project*; approximately 70 miles downstream of Humbug) and so would not overlap spatially with the Proposed Project. The Proposed Project includes road, bridge, and improvement projects associated with the primary access roads (Copco Road, Ager-Beswick Road, Lakeview Road), so other road repair projects occurring at the same time as the Proposed Project would necessarily be located elsewhere.

Other potential construction projects identified in Table 3.24-1 (e.g., *Sousa Ready Mix Concrete Batch Plant Project*, *Siskiyou County jail development*, and a potential nanocellulose facility development) are all located in Yreka, and as such, would not be likely to require use of the primary access roads associated with the Proposed Project (Copco Road, Ager-Beswick Road, Lakeview Road) for which short-term impacts to traffic flow, road safety, road conditions, emergency access, public transit, and non-motorized transportation could occur. California segments of Interstate 5, which would be used by workers and for hauling equipment and supplies to and from the Proposed Project, could be used by one or more of the potential other construction projects for the same reasons and during the same time period, although the smaller scale of the other projects would be unlikely to result in a high number of vehicle trips relative to the Proposed Project. Since Interstate 5 has sufficient capacity for added traffic (391 ADT) associated with the Proposed Project to keep the LOS level at LOS A (see Potential Impact 3.22-1), the combination of the Proposed Project and one or more other construction projects within the Area of Analysis would be unlikely to result in significant impacts to traffic and transportation. However, because the State Water Board has determined that short-term construction-related impacts of the Proposed Project would be significant and unavoidable with respect to traffic flow, road safety, road conditions, emergency access, public transit, and non-motorized transportation, unless and until KRRC reaches enforceable 'good citizen' agreements through the FERC process (as described above), it has determined the incremental contribution of the Proposed Project in this Draft EIR to be cumulatively considerable.

## Significance

### *Cumulatively considerable*

#### 3.24.23 Noise

The Area of Analysis for noise and vibration consists of areas in the general vicinity of Copco No. 1, Copco No. 2, and Iron Gate reservoirs, and project haul routes in Siskiyou County where there is potential for impacts to sensitive receptors (i.e., residences) from deconstruction, waste transportation, and worker commutes.

Existing conditions for noise are described in Section 3.23.2 *[Noise] Environmental Setting*. Noise-sensitive receptor locations (e.g., rural residences, residences, certain parks) were identified within the Area of Analysis for noise and vibration, based on a review of current topographic, aerial, and land use maps. Existing ambient noise levels were identified for both daytime and nighttime. At each dam work site, the estimated existing daytime and nighttime outdoor  $L_{eq}$  (equivalent sound level) at nearby sensitive receptors are 40 and 30 dBA (A-weighted decibels, representing the perception of loudness), respectively (USEPA 1974) (Table 3.23-1; and section 3.23.2.1 for definitions of relevant terms). Existing roadway traffic noise along the proposed haul routes associated with each dam is shown in Table 3.23-2.

The nature of noise impacts is that they are inherently in the present. For there to be a cumulative impact from two or more projects together exceeding acceptable noise volumes, there would need to be temporal overlap with the Proposed Project. Projects that do not have temporal overlap, but occur immediately before or after the Proposed Project, could have a cumulative impact by increasing the duration of elevated noise volumes. Therefore, this analysis considers projects that may overlap in space and time with the Proposed Project, or that may overlap in space and occur immediately before or after the Proposed Project.

This cumulative impact analysis focuses on the potential impacts of the Proposed that are not already considered in the analysis of noise resource area effects (Section 3.23). Other project activity types within the noise Area of Analysis with the potential for significant cumulative noise and vibration impacts include (see also Table 3.24-1):

- Large-scale development;
- Construction for riverine restoration projects;
- Fire management activities, including thinning;
- Mining;
- Use of agricultural vehicles and equipment; and
- Recreational activities involving motors or large crowds.

Significance criteria for noise and vibration impacts are the same as defined in Section 3.23.3 *[Noise] Significance Criteria*.

#### **Potential Cumulative Impact 3.24-66 Short-term noise effects from the Proposed Project in combination with other non-project activities.**

The Proposed Project would result in noise and vibration that will affect sensitive receptors and exceed Siskiyou County General Plan standards. Significant and unavoidable adverse environmental impacts would result from: construction equipment

exceeding maximum allowable noise levels (Potential Impact 3.23-1); noise disturbance to residents from construction-generated noise at Copco No. 1 and Iron Gate dams (Potential Impacts 3.23-2 and 3.23-4), reservoir restoration at Copco No.1 and Iron Gate dams (Potential Impact 3.23-5); and vibration disturbance from blasting activities at Copco No. 1, Copco No. 2, and Iron Gate dams (Potential Impact 3.23-6). Other noise and vibration generation from the Proposed Project would not have a significant adverse impact (Section 3.23-5 *[Noise] Potential Impacts and Mitigation*). Upon review of other projects that are anticipated to result in a noise or vibration disturbance (Table 3.24-1), most of these do not overlap in space and time with the Proposed Project. It is possible that some riverine restoration projects, such as projects under the Klamath Basin Restoration Program, and fire management projects, could overlap temporally, but they are unlikely to occur close enough to Proposed Project construction and blasting areas to contribute to a cumulative impact. Ongoing mining, agricultural, and recreational activities could also overlap temporally, but no new projects or activities of this nature have been identified within the vicinity of Copco No. 1, Copco No. 2, and Iron Gate dams; therefore, noise generation from these activities would be part of the existing conditions. Additionally, recreational access to the Lower Klamath Project reservoirs would be limited during blasting and heavy construction periods such that ongoing recreational activities that generate noise would be unlikely to occur within the noise and vibration Area of Analysis. Potential future large-scale development projects identified in Table 3.24-1 (e.g., Sousa Ready Mix Concrete Batch Plant Project, Siskiyou County jail development, and a potential nanocellulose facility development, all in Yreka) are not close enough to the Proposed Project's expected area of noise and vibration generation to result in a significant and adverse combined impact. No other closely related projects that would result in a significant and adverse combined noise impact along Proposed Project haul routes have been identified.

Although the Proposed Project would result in significant and unavoidable adverse impacts due to construction- and restoration-related noise, there are no closely related projects that would, in combination with the Proposed Project, result in further significant and adverse noise and/or vibration impacts. Thus, there would be no significant cumulative noise or vibration impacts due to the Proposed Project and other closely related projects.

#### Significance

*No significant cumulative impact*

#### 3.24.24 References

Bartholow, J. 2005. Recent water temperature trends in the Lower Klamath River, California. *North American Journal of Fisheries Management* 25: 152–162.

Bedsworth, L., D. Cayan, G. Franco, L. Fisher, S. Ziaja. (California Governor's Office of Planning and Research, Scripps Institution of Oceanography, California Energy Commission, California Public Utilities Commission). 2018. Statewide Summary Report. California's Fourth Climate Change Assessment. Publication number: SUMCCA4-2018-013. <http://www.climateassessment.ca.gov/state/docs/20180827-StatewideSummary.pdf>

CAL FIRE. 2016. 2016 Incident information. Website. [http://cdfdata.fire.ca.gov/incidents/incidents\\_archived?archive\\_year=2016&pc=5&cp=4](http://cdfdata.fire.ca.gov/incidents/incidents_archived?archive_year=2016&pc=5&cp=4) [Accessed October 2018]. Prepared by CAL FIRE, Sacramento, California.

CAL FIRE. 2017. 2017 Incident information. Website. [http://cdfdata.fire.ca.gov/incidents/incidents\\_archived?archive\\_year=2017](http://cdfdata.fire.ca.gov/incidents/incidents_archived?archive_year=2017) [Accessed October 2018]. Prepared by CAL FIRE, Sacramento, California.

CAL FIRE. 2018. 2018 Incident information. Website. [http://www.fire.ca.gov/current\\_incidents](http://www.fire.ca.gov/current_incidents) [Accessed October 2018]. Prepared by CAL FIRE, Sacramento, California.

California Natural Resources Agency. 2018. Bond accountability: Proposition 1 overview. Website. <http://bondaccountability.resources.ca.gov/p1.aspx> [Accessed November 2018]. Prepared by California Natural Resources Agency, Sacramento, California.

CalTrout. 2017. CalTrout receives grants for fish passage improvement projects. Prepared by CalTrout, San Francisco, California.

CAWCB (California Wildlife Conservation Board). 2018a. 2018 Proposition 1 stream flow enhancement program. Proposal Solicitation Notice. Prepared by CAWCB, Sacramento, California.

CAWCB. 2018b. Climate adaptation program. Website. <https://wcb.ca.gov/Programs/Climate-Adaptation> [Accessed October 2018]. Prepared by CAWCB, Sacramento, California.

City of Yreka. 2016. 2016 Greenway Master Plan and Flood Hazard Reduction Project. Draft Environmental Impact Report. Prepared by City of Yreka, California.

Del Norte County. 2017a. Engineering and Surveying Division Projects: Hunter Creek Bridge Replacement Project. Website. <http://www.co.del-norte.ca.us/departments/community-development-department/engineering-division/projects>. Prepared by Del Norte County, California.

Del Norte County. 2017b. Del Norte County Planning Commission Agenda. Consent Agenda: Yurok Tribe. Website: [http://countyofdelnorte.us/agendas/agenda\\_management/agendas/PLN1216.pdf](http://countyofdelnorte.us/agendas/agenda_management/agendas/PLN1216.pdf). Prepared by Del Norte County, California.

Del Norte County. 2018a. Del Norte County Planning Commission Agenda. Consent Agenda: Klamath Community Services District. Website: [http://countyofdelnorte.us/agendas/agenda\\_management/agendas/PLN1355.pdf](http://countyofdelnorte.us/agendas/agenda_management/agendas/PLN1355.pdf). Prepared by Del Norte County, Yreka, California.

Del Norte County. 2018b. Del Norte County OHV Projects. Website. <http://www.co.del-norte.ca.us/departments/community-development-department/planning-division/del-norte-county-ohv-planning-project>. Prepared by Del Norte County, Yreka, California.

DWR (Department of Water Resources). 2014. SGMA groundwater management. Website. <https://water.ca.gov/Programs/Groundwater-Management/SGMA-Groundwater-Management> [Accessed October 2018]. Prepared by DWR, Sacramento, California.

Herald and News. 2017. Reclamation official to make third trip to the basin. [https://www.heraldandnews.com/news/local\\_news/reclamation-official-to-make-third-trip-to-the-basin/article\\_c93276ec-731d-5e39-8b31-8ba1a98e3a7a.html](https://www.heraldandnews.com/news/local_news/reclamation-official-to-make-third-trip-to-the-basin/article_c93276ec-731d-5e39-8b31-8ba1a98e3a7a.html) [Accessed October 2018].

Herald and News. 2018. Mikkelson visits basin: Water solutions a long way off. [https://www.heraldandnews.com/news/local\\_news/mikkelsen-visits-basin-water-solutions-a-long-way-off/article\\_f3e08c4c-391d-563b-901d-aa7489fe13ab.html](https://www.heraldandnews.com/news/local_news/mikkelsen-visits-basin-water-solutions-a-long-way-off/article_f3e08c4c-391d-563b-901d-aa7489fe13ab.html) [Accessed October 2018].

Hillemeier, D., M. Belchik, T. Soto, S. C. Tucker, and S. Ledwin. 2017. Measures to reduce Ceratanova shasta infection of Klamath River salmonids: a guidance document.

Humboldt County. 2017a. OnTrack Current Planning Division Activity Report. Website. <https://humboldt.gov/DocumentCenter/View/5523/summary-chart-of-projects-opened-by-the-Current-Planning-Division-in-the-previous-month?bidId=>. Prepared by Humboldt County Planning and Building Department, Eureka, California.

Humboldt County. 2017b. Zoning Administrator Hearing: December 14, 2017. Website. [https://humboldt.gov/AgendaCenter/ViewFile/Agenda/\\_12142017-1015](https://humboldt.gov/AgendaCenter/ViewFile/Agenda/_12142017-1015). Prepared by Humboldt County Planning and Building Department, Eureka, California.

Humboldt County. 2017c. Zoning Administrator Hearing: September 21, 2017. Website. [https://humboldt.gov/AgendaCenter/ViewFile/Agenda/\\_09212017-975](https://humboldt.gov/AgendaCenter/ViewFile/Agenda/_09212017-975). Prepared by Humboldt County Planning and Building Department, Eureka, California.

Humboldt County. 2018a. Zoning Administrator Hearing: May 10, 2018. Website. [https://humboldt.gov/AgendaCenter/ViewFile/Agenda/\\_05102018-1077](https://humboldt.gov/AgendaCenter/ViewFile/Agenda/_05102018-1077). Prepared by Humboldt County Planning and Building Department, Eureka, California.

Humboldt County. 2018b. Zoning Administrator Hearing: April 19, 2018. Website. [https://humboldt.gov/AgendaCenter/ViewFile/Agenda/\\_04192018-1069](https://humboldt.gov/AgendaCenter/ViewFile/Agenda/_04192018-1069). Prepared by Humboldt County Planning and Building Department, Eureka, California.

Humboldt County. 2018c. Zoning Administrator Hearing: March 22, 2018. Website. [https://humboldt.gov/AgendaCenter/ViewFile/Agenda/\\_03222018-1055](https://humboldt.gov/AgendaCenter/ViewFile/Agenda/_03222018-1055). Prepared by Humboldt County Planning and Building Department, Eureka, California.

Humboldt County. 2018d. Zoning Administrator Hearing: January 18, 2018. Website. [https://humboldt.gov/AgendaCenter/ViewFile/Agenda/\\_01182018-1027](https://humboldt.gov/AgendaCenter/ViewFile/Agenda/_01182018-1027). Prepared by Humboldt County Planning and Building Department, Eureka, California.

Humboldt County. 2018e. Titlow Hill General Plan Amendment, Zone Reclassification, and Subdivision Application SCH#2017122035. Notice of Preparation of a Draft Environmental Impact Report. <https://humboldt.gov/DocumentCenter/View/62953/Titlow-Hill-Extended-Notice-of->

[Preparation-of-a-Draft-Environmental-Impact-Report-1-31-18-PDF?bidId=](#) [Accessed December 2018]. Prepared by Humboldt County, Planning and Building Department, Eureka, California.

KHSA (Klamath Hydroelectric Settlement Agreement). 2016. Klamath Hydroelectric Settlement Agreement. February 18, 2010 as amended April 6, 2016

McClelland Architecture + Planning. 2018. Ringe Pool facility condition assessment. Prepared by McClelland Architecture + Planning, Walnut Creek, California.

Michalak, A. M. 2016. Study role of climate change in extreme threats to water quality. *Nature News* 535: 349–350.

NFWF (National Fish and Wildlife Foundation). 2016. Klamath River coho enhancement fund. Prepared by NFWF, Washington, D.C.

NFWF. 2017. Klamath River Coho Habitat Restoration 2017 Grant Slate. Prepared by NFWF, Washington, D.C.

NMFS and USFWS (National Marine Fisheries Service and U.S. Fish and Wildlife Service). 2013. Biological opinions on the effects of Proposed Klamath Lower Klamath Project Operations from May 31, 2013, through March 31, 2023, on five federally listed threatened and endangered species NMFS File Number SWR-2012-9371 and FWS File Number 08EKLA00-2013-F-0014.

ODF (Oregon Department of Forestry). 2016. Fire season report 2016. Prepared by Oregon Department of Forestry, Salem.

ODF. 2017. 2017 Wildfire report. Prepared by Oregon Department of Forestry, Salem.

ODF. 2018. Current information about fires on department protected lands: Watch out for Watson Creek Fire. Website. <http://wildfireORdeptofforestry.blogspot.com/2018/08/watch-out-for-watson-creek-fire.html> [Accessed October 2018]. Prepared by Oregon Department of Forestry, Salem.

Perry, R. W., J. C. Risley, S. J. Brewer, E. C. Jones, and D. W. Rondorf. 2011. Simulating water temperature of the Klamath River under dam removal and climate change scenarios. U.S. Geological Survey Open File Report 2011-1243. U.S. Department of Interior, U.S. Geological Survey, Reston, Virginia.

Siskiyou County. 2015. Sustainable Groundwater Management Act update, October 6, 2015 Board Meeting. Memorandum. Prepared for Siskiyou County Board of Supervisors, Yreka, California.

Siskiyou County. 2017. Public Works—Contract 16-07 Guys/Schulmeyer Gulch bridges. Website. <https://www.co.siskiyou.ca.us/content/public-works-contract-16-07-guysschulmeyer-gulch-bridges> [Accessed October 2018]. Prepared by Siskiyou County Public Works, Yreka, California.

Siskiyou County. 2018a. A resolution of the Agritourism Technical Advisory Committee, County of Siskiyou, State of California recommending that the Planning Commission



consider the following modification to the AG1, AG2 and RR Zoning Districts in Siskiyou County. Prepared by Siskiyou County Agritourism Technical Advisory Committee, Yreka, California.

Siskiyou County. 2018b. A resolution of the Multispecies Technical Advisory Committee, County of Siskiyou, State of California recommending that the planning commission consider the following modifications to the AG1, AG2, and RR Zoning Districts in Siskiyou County. Prepared by Siskiyou County Multispecies Technical Advisory Committee.

Siskiyou County. 2018c. Planning Division – JH Ranch Documentation. Website. <https://www.co.siskiyou.ca.us/content/planning-division-jh-ranch-documentation>. Prepared by Siskiyou County Planning Division.

Siskiyou County. 2018d. Planning – Kidder Creek Orchard Camp. Website. <https://www.co.siskiyou.ca.us/content/planning-kidder-creek-orchard-camp>. Prepared by Siskiyou County Community Development Department, Yreka, California.

Siskiyou County. 2018e. Notice of Availability of a Draft Initial Study/Mitigated Negative Declaration Notice of Intent to adopt a Mitigated Negative Declaration and Notice of Public Hearing Cannaworx Zone Change (Z-15-05). Prepared by Siskiyou County Community Development Department, Yreka, California.

Siskiyou County. 2018f. Public Works—Contract 17-02 Salmon Rv. Rd. Flood Damage Repair at M.P. 5.76. Website. <https://www.co.siskiyou.ca.us/content/public-works-contract-17-02-salmon-rv-rd-flood-damage-repair-at-mp-576> [Accessed October 2018]. Prepared by Siskiyou County Public Works, Yreka, California.

Siskiyou County. 2018g. Public Works—FAP No. BRLO-5902(080) Wooley Creek Bridge Rehabilitation and Pier Repair. Website. <https://www.co.siskiyou.ca.us/content/public-works-fap-no-brlo-5902080-wooley-creek-bridge-rehabilitation-and-pier-repair> [Accessed October 2018]. Prepared by Siskiyou County, Yreka, California.

Siskiyou County. 2018h. Denny Point Tower (UP-18-04) Draft Initial Study/Mitigated Negative Declaration. Prepared by Siskiyou County, Yreka, California.

Siskiyou County. 2018i. Notice of Intent to adopt a Mitigated Negative Declaration for Siskiyou County Jail. Prepared by Siskiyou County Community Development Department, Yreka, California.

Siskiyou County. 2018j. Planning Division – Karuk Tribe Casino Project. Website. <https://www.co.siskiyou.ca.us/content/planning-division-karuk-tribe-casino-project>. Prepared by Siskiyou County Planning Division, Yreka, California.

SWRCB (State Water Resources Control Board). 2018. Nonpoint Source Pollution (NPS) Control Program: grants and funding. Website. [https://www.waterboards.ca.gov/water\\_issues/programs/nps/319grants.html](https://www.waterboards.ca.gov/water_issues/programs/nps/319grants.html) [Accessed December 2018]. Prepared by SWRCB, Sacramento, California.

TCRCD (Trinity County Resource Conservation District). 2018. West Weaver Creek Salmonid Habitat Rehabilitation Project. Website. <http://tcrd.net/index.php/2014-02-05-08-30-03/west-weaver-creek-salmonid-habitat-rehabilitation-project> [Accessed October 2018]. Prepared by TCRCD, Weaverville, California.

Trinity County Planning Commission. 2016. Trinity County Planning Commission Staff Report: Application No. PW-15-01. Prepared by Trinity County Planning Commission, Yreka, California.

Trinity County Planning Commission. 2017. Trinity County Planning Commission Staff Report: Application No. PW-17-01. Prepared by Trinity County Planning Commission, Yreka, California.

Trinity County Planning Commission. 2018. Trinity County Planning Commission Staff Report: Application No. PW-17-11. Prepared by Trinity County Planning Commission, Yreka, California.

Trinity County. 2018. Agenda, minutes, and staff reports. Website. <https://www.trinitycounty.org/Agendas-Minutes-Staff-Reports> [Accessed October 2018].

USBR (U.S. Bureau of Reclamation). 2009. Trinity River Restoration Program Channel Rehabilitation and Sediment Management Master (Programmatic) EIR and Site Specific EA/EIR for Remaining Phase I Activities. Prepared by USBR, Mid-Pacific Region, Sacramento California.

USBR. 2012c. Hydrology, Hydraulics and Sediment Transport Studies for the Secretary's Determination on Klamath River Dam Removal and Basin Restoration. Technical Report No. SRH-2011-02. Prepared for Mid-Pacific Region, Bureau of Reclamation, Technical Service Center, Denver, Colorado.

USBR. 2015. Trinity River channel rehabilitation site: Limekiln Gulch (River Mile 99.7–100.6) EA/IS. Prepared by USBR, Mid-Pacific Region, Sacramento California.

USBR. 2016. Trinity River channel rehabilitation site: Bucktail (River Mile 105.45–107.0). Prepared by USBR, Mid-Pacific Region, Sacramento California.

USBR. 2017a. Long-term plan to protect adult salmon in the Lower Klamath River. Prepared by USBR, Mid-Pacific Region, Sacramento California.

USBR. 2017b. Trinity River channel rehabilitation site: Deep Gulch and Sheridan Creek (River Mile 81.6–82.9). Prepared by USBR, Mid-Pacific Region, Sacramento California.

USBR. 2018a. Reclamation releases draft environmental documents for Klamath River Coho Restoration Grant Program funding. Prepared by USBR, Sacramento, California.

USBR. 2018b. Lewiston Community Services District Wastewater Collection, Treatment and Disposal Project. Prepared by USBR, Mid-Pacific Region, Sacramento California.

USDA Forest Service. 2017a. Proposal to add aminopyralid to the list of approved herbicides for the Deschutes National Forest. Prepared by USDA Forest Service, Deschutes National Forest, Bend, Oregon.

USDA Forest Service. 2017b. Horse Creek Community Protection and Forest Restoration Project. Website. <https://www.fs.usda.gov/project/?project=50586> [Accessed October 2018].

USDA Forest Service. 2018a. Schedule of Proposed Action (SOPA) Klamath National Forest. Prepared by USDA Forest Service, Klamath National Forest, Yreka, California.

USDA Forest Service 2018b. Schedule of Proposed Action (SOPA) Rogue-River-Siskiyou National Forest. Prepared by USDA Forest Service, Rogue River-Siskiyou National Forest, Medford, Oregon.

U.S. District Court. 2017. Hoopa Valley Tribe v. U.S. Bureau of Reclamation et al. and Klamath Water Users Association et al. Case No. 3:16-cv-04294-WHO. Order modifying February 8, 2017 injunction. U.S. District Court for the Northern District of California, San Francisco Division.

USEPA (U.S. Environmental Protections Agency). 2018. U.S. EPA marks one-year anniversary of Superfund Task Force Report with visit to Copper Bluff Mine. Available at: <https://www.epa.gov/newsreleases/us-epa-marks-one-year-anniversary-superfund-task-force-report-visit-copper-bluff-mine>. Prepared by USEPA, Region 09, San Francisco, California.

Yreka Planning Commission. 2017. Minutes of the regular meeting of the Yreka Planning Commission held on the 19th day of July 2017. Prepared by Yreka Planning Commission, Yreka, California.

*This page left blank intentionally.*