

### 3.21 Hazards and Hazardous Materials

This section describes the environmental setting for hazards and hazardous materials, as well as potential environmental impacts and associated mitigation measures for the Proposed Project. The discussions in the following subsections focus primarily on the transport, use, and disposal of hazardous materials, school proximity to hazardous materials, contaminants and contaminated sites, nearby airports, emergency response plans, and wildfires.

The State Water Board received comments expressing the following concerns related to hazards and hazardous materials: water in the Lower Klamath Project reservoirs would no longer be available for use in fire suppression; and construction-related traffic, including hauling of hazardous materials and waste, would occur on the single access route for the Copco No. 1 Dam area, which could affect the safety of other road users such as school busses, residents, pedestrians, livestock and dogs. Additional details regarding the public comments received during the NOP public scoping process can be found in Appendix A.

#### 3.21.1 Area of Analysis

The Area of Analysis for hazards and hazardous materials includes lands within the Project Boundary (Figure 2.2-4). This area 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 construction/demolition and staging areas are described in specific detail in this EIR in Section 2 *Proposed Project* and in Sections 5.3, 5.4, and 5.5 of Appendix B: *Definite Plan*. Consideration of hazards and hazardous materials also includes considering routes proposed to be utilized for the transportation of construction debris (see Section 3.22 *Traffic and Transportation*).

#### 3.21.2 Environmental Setting

This section describes the environmental setting associated with the exposure to various potential hazards and hazardous materials. For discussion of other related hazards, the table below describes topics and where these other hazards are discussed.

Table 3.21-1. Hazards-related Discussion Found Elsewhere in this EIR.

Hazard	Section No.	Topic(s)
Water Quality	3.2	Water Quality
Flooding	3.6	Flood Hydrology
Vehicle and Toxic Emissions	3.9	Air Quality
Geologic	3.11	Geology and Soils
Emergency Response	3.17	Public Services
Emergency Response	3.22	Transportation and Traffic

##### 3.21.2.1 Transport/Releases of Hazardous Materials

California Health and Safety Code Section 25501(n) defines hazardous material as any material “that, because of its quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment if released into the workplace or the environment.”

Hazardous substances include, but are not limited to, hazardous materials, hazardous waste, and, any material which a handler or regulatory agency has a reasonable basis for believing would be injurious to the health and safety of persons or harmful to the environment if released into the workplace or the environment.

California Code of Regulations (CCR), Title 22, Division 4.5, Chapter 11, Article 2, Section 66261.10, identifies a hazardous material as a substance (or combination of substances) that may cause or significantly contribute to an increase in mortality or an increase in serious, irreversible, or incapacitating illness, or that may pose a substantial hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed. Hazardous wastes are hazardous substances that no longer have practical use, such as materials that have been discarded, discharged, spilled, or contaminated, or are being stored until they can be disposed of properly. The Department of Toxic Substances Control (DTSC) (DTSC 2018a) further defines hazardous wastes as wastes from manufacturing processes, manufacturing industries, unused commercial chemical products or products containing mercury (CCR, Title 22, Division 4.5, Chapter 11, Article 4, Section 66261.31-33). Hazardous wastes can also be characterized as defined in Article 3 of Chapter 11 of the hazardous waste regulations (CCR, Title 22, Chapter 11, Article 3, §§ 66261.21–66261.24) according to four properties:

- toxicity (or the degree to which a substance can damage an organism),
- ignitability (or the capability of a material to be ignited or set on fire),
- corrosiveness (the ability of a material to eat away or disintegrate another material), and
- reactivity (the stability of a material).

The Hazardous Waste and Substances Sites List, also known as the Cortese List, is a planning document used by the state, local agencies, and developers to comply with CEQA requirements in providing information about the location of hazardous materials release sites. Government Code section 65962.5 requires the California Environmental Protection Agency (CalEPA) to maintain an updated Cortese List. DTSC is responsible for a portion of the information contained in the Cortese List. Other state and local government agencies are required to provide additional hazardous material release information for the Cortese List. Below are the data resources that provide information regarding the facilities or sites identified as meeting the Cortese List requirements (CalEPA 2017).

- List of Hazardous Waste and Substances sites from DTSC EnviroStor database.
- List of Leaking Underground Storage Tank Sites by county and fiscal year from State Water Board GeoTracker database.
- List of solid waste disposal sites identified by State Water Board with waste constituents above hazardous waste levels outside the waste management unit.
- List of Active Cease and Desist Orders and Cleanup and Abatement Orders identified by the Regional Water Quality Control Boards.
- List of hazardous waste facilities subject to corrective action pursuant to section 25187.5 of the Health and Safety Code, identified by DTSC.

Hazardous wastes that are to be transported off site would utilize local roads to reach Interstate 5 so that they can be disposed of at required facilities (see 3.22 Traffic and

Transportation for additional information). Likewise sources of hazardous materials, such as fuels and lubricants, welding materials, and explosives to be used during construction activities, will travel primarily from Interstate 5 along local roads to the work areas. This transport of materials could result in the potential for an increased risk in release of these hazardous substances into the environment.

There is an existing transfer station near the City of Yreka that accepts Class II sanitary landfill materials such as construction and demolition wastes, mixed municipal wastes, metals, and mixed municipal recyclable materials. Wastes are currently hauled 45 miles to the Dry Creek Landfill in White City Oregon. The Class I Anderson Landfill in Anderson, California, located 122 miles from Hornbrook, California, is permitted to accept hazardous waste, including treated wood waste. Existing capacity is available for wastes generated by the Proposed Project, as described in Section 3.18.2.4 *Solid Waste*.

USEPA is the primary federal agency responsible for the implementation and enforcement of hazardous materials regulations. In most cases, enforcement of the federal laws and regulations is delegated to state and local environmental regulatory agencies. California implements federal regulations through the DTSC, which identifies the Siskiyou County Environmental Health Department as the Certified Unified Program Agency. The Certified Unified Program Agency works closely with lead agencies through project review to ascertain the impacts from hazardous materials.

#### 3.21.2.2 School Proximity

No schools are within a quarter mile of the dam demolition or equipment staging areas (see Figure 3.21-1). The closest existing schools to Iron Gate Dam are Bogus Elementary School, 5.4 miles away; Willow Creek Elementary School, 5.5 miles away; and Hornbrook Elementary School, 6 miles away. Distances from Copco No. 1 and Copco No. 2 to the nearest schools are similar to or greater than distances from Iron Gate Dam.

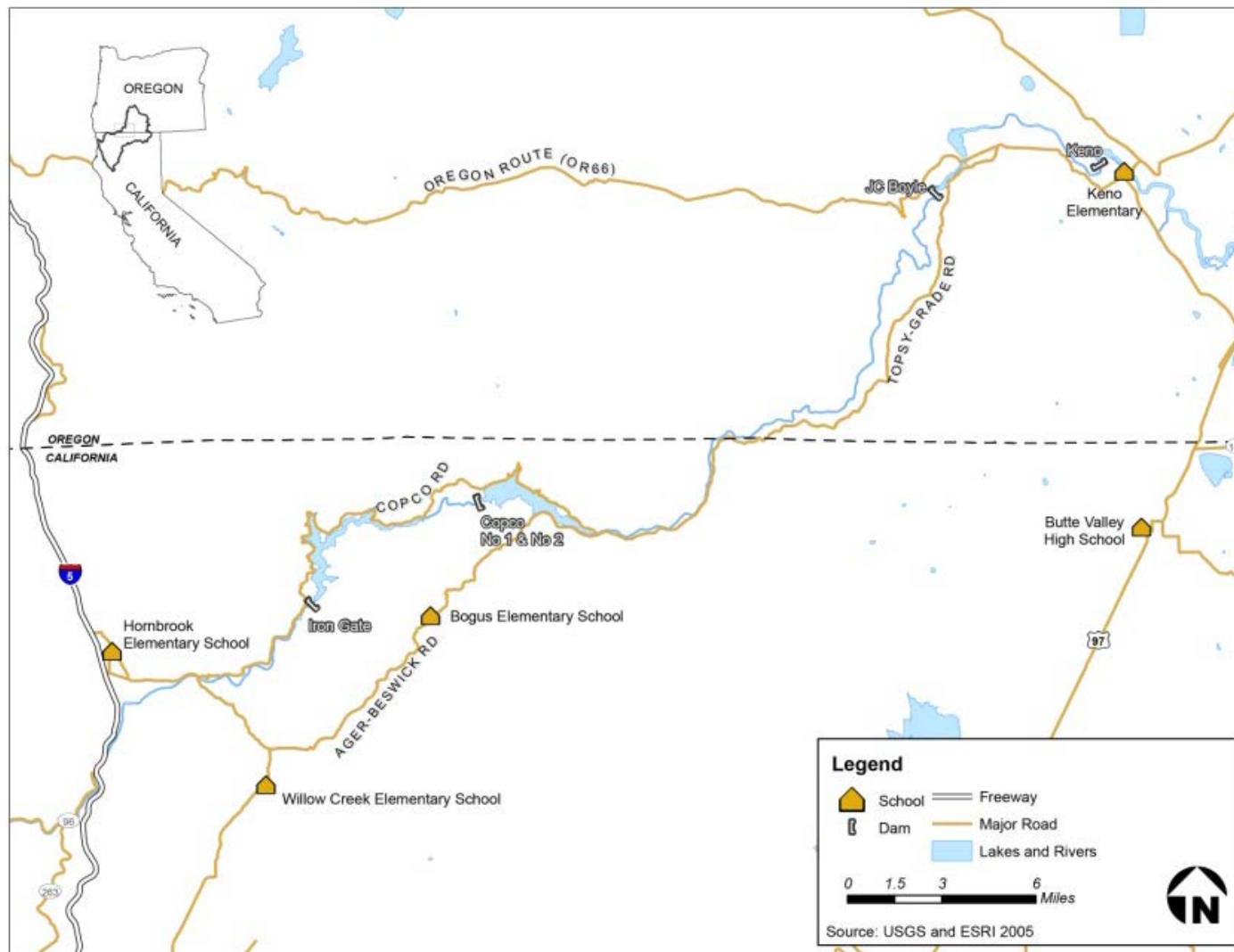


Figure 3.21-1. School Sites Near the Project Area.

### 3.21.2.3 Contaminants/Contaminated Sites

A comprehensive search of commercial databases was performed by Environmental Data Sources, Inc. (EDR 2010) to identify potential sites that may be contaminated with hazardous substances in the vicinity of the Proposed Project and to identify sites where soil and/or groundwater contamination may be present. Four Hazardous, Toxic, and Radioactive Waste (HTRW) sites, within the 2012 KHSA EIS/EIR Area of Analysis for hazards and hazardous materials, were identified by the 2010 EDR search. Two of the listings indicated the presence of underground and aboveground storage tanks at the Copco Lake Store and the “Pacific Power – Iron Gate,” respectively; but there was no evidence of spills. The third listing referenced health limit exceedances in water samples from the Copco Lake Municipal Water Company for radium-228, arsenic (total), bromodichloromethane, dichloroacetic acid, and total haloacetic acids between 2004 and 2006, and for aluminum in water samples collected since 2004. The fourth listing resulted from a minor spill of non-PCB transformer oil at the Copco No. 2 Powerhouse, which was remediated and no longer is a site of concern. The spill is also listed in the California Hazardous Material Incident Reporting System and the Emergency Response Notification System databases. The EDR listing indicated that a bushing failed in 1999 at a transformer adjacent to the Klamath River releasing transformer oil. Most of the oil was contained, and less than one quart reached the Klamath River.

In addition to the four sites described above, the EDR research identified 162 “orphan sites,” which are those sites that could not be mapped or “geocoded” due to inadequate address information along the two corridors of the Klamath River. Seven of the orphan sites are identified within the 2012 KHSA EIS/EIR Area of Analysis: Two are National Pollutant Discharge Elimination System-permitted facilities and one is a Waste Discharge Requirements-regulated facility; these do not present concerns related to HTRW. Two sites indicated the presence of underground and aboveground storage tanks at Iron Gate Dam; one site, listed on the Emergency Response Notification System, is the Copco No. 2 Powerhouse minor spill described above; and the remaining two sites were listed on the California Facility and Manifest Database and the leaking underground storage tank databases. No additional information was available in the State Water Board’s GeoTracker database or the DTSC’s EnviroStor database. No additional information on the presence of HTRW at the Proposed Project site is available.

An updated search of DTSC’s Cortese List and search for sites with reported hazardous material spills, leaks, ongoing investigations, and/or remediation near the Proposed Project vicinity was performed using EnviroStor and GeoTracker (DTSC 2018b, State Water Board 2018). The updated search of site listings within these databases identified the Laubacher Ranch (Ager-Beswick Road, Montague, CA) as a leaking underground gasoline storage tank cleanup site undergoing remediation. The site is located adjacent to the Klamath River approximately four miles upstream from Copco No. 1 Reservoir. This case was completed/closed as of September 2017. (DTSC 2018b).

A review of the California Office of Emergency Services (CalOES) hazardous spill database was also reviewed for any incidents in the vicinity of the project facilities and the results are summarized in Table 3.21-2. (CalOES 2017). None of these indicated a need for further reporting.

Table 3.21-2. Hazardous Materials Spill Report.

CalOES 2018	Accessed 10/17/2018	Substance Type	Date
Control #	Reporting Party		
06-2856	PacifiCorp	Non-PCB Transformer Oil	5/12/2006
06-2940	NRC	Oil sheen in Klamath River	5/16/2006
12-4295	PacifiCorp	Oil from ski boat sank in Iron Gate Reservoir	7/24/2012
12-7480	Private Citizen	Septic sewage into creek. 20738 Ager Beswick Rd	12/7/2012
16-1355	PacifiCorp	Oil from vehicle crash into Iron Gate Reservoir.	3/4/2016
16-1563	Private Citizen	Diesel from leaking tractor. 15629 Klamath Rd	3/12/2016
17-1030	PacifiCorp	Oil from vehicle rolled into Iron Gate Reservoir	2/3/2017
17-2111	CALFIRE Yreka	Oil from boat fire	3/14/2017
18-1265	PacifiCorp	Oil from equipment spill, Fall Creek Rec Boat Ramp	2/26/2018

As reported in the 2012 KHSA EIS/EIR:

- In 2009, at the Copco No. 1 warehouse, soil known to be contaminated by petroleum products was removed from a former lube rack area. The final report and site cleanup was approved by a letter from Siskiyou County in 2010.
- In 2009, a former landfill site at Copco No. 2 Dam was removed per Siskiyou County review and approval.
- Copco No. 2 Dam's fueling facility has two aboveground storage tanks (1,000-gallon gasoline and 500-gallon diesel). No known spills or cleanups occurred at this facility.

No additional information was found related to these hazardous material issues at Copco No. 1 and No. 2 dams during the updated database searches (DTSC 2018b, State Water Board 2018).

The Lower Klamath Project dams and associated facilities include painted structures, equipment, and metalwork that may contain potentially hazardous materials. Window caulking, electrical wiring and components, building materials, and some coatings may contain asbestos. Surrounding soils may contain heavy metal contaminants where coatings have flaked off of the painted structures, equipment, and metalwork. There are no known reports that indicate building components and/or soil surrounding the facilities have been tested (Appendix B: Detailed Plan).

Certain closed systems, such as transformer bushings, cannot be tested until time of disposal. Thus, small quantities of polychlorinated biphenyls (PCBs) may be present in hydraulic fluids, soils, and in transformers and other electrical equipment, including older fluorescent light fixtures. Old light switches may contain mercury. The dams and hydroelectric facilities within the Proposed Project area may also include items such as transformers, batteries, bushings, oil storage tanks, bearing and hydraulic control system oils, lead bearings, soils or other material contaminated with lead from the use of lead-based paints or plumbing and 700 tons of creosote-treated wood in the wooden stave penstock at Copco No. 2 Dam (see also Appendix B: *Definite Plan – Appendix O3*).

Phase 1 and Phase 2 Environmental Site Assessments are currently underway (Appendix B: *Definite Plan*).

#### 3.21.2.4 Nearby Airports

The Proposed Project is not located in the vicinity of any private or public use airport or airfield. Siskiyou County operates five public use, general aviation airports: Butte Valley, Happy Camp, Scott Valley, Weed, and Siskiyou County. A private emergency medic flight service operates between Medford, Oregon and Redding, California. Each airport is owned and operated by their respective city. The Siskiyou County Airport, located in Shasta Valley—11 miles east of Yreka—is home to a USDA Forest Service Fire Attack Base in the summer months (Greendot 2016). The USDA Forest Service also operates Happy Camp Airport at Happy Camp. The closest public airport to project facilities is Siskiyou County Airport, which is more than 10 miles south of Iron Gate Dam in Montague. Pinehurst State Airport in Oregon is located approximately nine miles north of Copco No. 1 Reservoir. The closest commercial airport in California to the proposed project is Redding Municipal Airport, located in Redding, approximately 130 miles south of the project site.

In addition to public use airports, a number of private airstrips are operated in Siskiyou County. Six private airstrips are listed for the area: Lefko, Round Mountain, Coonrod Ranch, Triple Ranch, McCloud, and Longbell Ranch. The closest private airstrip to the Proposed Project is Coonrod Ranch Airstrip, located approximately 25 miles south.

#### 3.21.2.5 Emergency Response Plans

The Governor's Office of Emergency Services (CalOES) coordinates preparedness for and response to natural disasters such as earthquakes, fires, and floods by activating the California Standardized Emergency Management System (SEMS) used by all California public safety agencies. Section 3.17 *Public Services* contains a description of the various agencies (fire, police, medical) that would respond in case of an emergency within the Area of Analysis. Each of these agencies has their own defined emergency response capabilities. Developing an emergency response plan would be one of the elements required by SEMS.

Siskiyou County began the emergency response planning process in the 2010 Siskiyou County Multi-Jurisdictional Hazard Mitigation Plan (Plan). The Plan identified natural hazards within Siskiyou County and outlined the history, future vulnerability, and future damage potential for each hazard. The Plan's goal is to identify mitigation projects that will reduce the vulnerability and damage potential of each hazard. The Plan addresses earthquake, flood, wildfire, landslide/other earth movement, drought, severe weather/storm, dam failure, and volcano/lahar/ash fall hazards. For additional information visit <http://www.co.siskiyou.ca.us/content/oes-hazard-mitigation-plan> (accessed April 10, 2018).

As part of the County's plans for emergency evacuation, Siskiyou County has instituted a rapid emergency notification service called CodeRED®. CodeRED® employs internet mapping capability for geographic targeting of calls, coupled with a high-speed telephone calling system capable of delivering customized pre-recorded emergency messages directly to homes and businesses, live individuals, and answering machines. This service can be used in case of fires, chemical spills, evacuations, lock downs,

downed power lines, lost individuals, natural disasters, abductions, water system problems, bomb threats, or other emergencies (County of Siskiyou 2018b).

No hospitals and only one fire station (Copco Lake Fire Department Station 210) at Copco No. 1 Reservoir, are within the Area of Analysis. The nearest hospitals are Fairchild Medical Center in the City of Yreka, California (18 miles southwest of Iron Gate Dam), Ashland Community Hospital in Ashland, Oregon (35 miles north-northwest of Iron Gate Dam), and Sky Lakes Medical Center in Klamath Falls, Oregon (52 miles east-northeast of Copco). Other emergency responders are discussed in Section 3.17 Public Services.

#### 3.21.2.6 Wildfires

Wildland fires represent a substantial threat to rural residences, timber, and other infrastructure or improvements located within the Klamath River watershed, particularly during the hot, dry summer months in areas where topography, land use, access, and heavy fuel loading contribute to hazardous conditions. During implementation of the Proposed Project, wildland fires may be started by natural processes, primarily lightning, or by human activities, including construction activities.

CALFIRE has established a fire hazard severity classification system to assess the potential for wildland fires<sup>170</sup>. The zones depicted on CALFIRE maps take into account the potential fire intensity and speed, production and spread of embers, fuel loading, topography, and climate (e.g., temperature and potential for strong winds).

The Proposed Project area along the Klamath River in Siskiyou County has been classified as having either high or very high wildfire hazard, with very high hazard land concentrated from the eastern portion of Copco No. 1 Reservoir to the Oregon border. (CALFIRE 2007). Under state regulations, areas within these very high fire hazard zones must comply with specific building and vegetation management requirements intended to reduce property damage and loss of life within these areas. Public Resources Code (PRC) 4291 requires a 100-foot defensible zone around each structure. It is these defensible spaces that CALFIRE notes (CALFIRE 2016) are the most effective way of reducing wildfire hazards to structures. Success only occurs under the combined efforts of strong fire suppression with aggressive and robust fire prevention activities (CALFIRE 2018).

Appendix B: *Definite Plan –Appendix O1 Fire Management Plan* contains a list of applicable fire suppression agencies and applicable regulations. The Fire Management Plan requires coordination with multiple city, county, state, and federal fire suppression agencies including USDA Forest Service, Bureau of Land Management (BLM), the Oregon Department of Forestry (ODF) Klamath-Lake District (KLD), Cal Fire - Siskiyou Unit (Cal Fire SU), local districts of Klamath and Jackson Counties in Oregon and Siskiyou County in California, and local city and volunteer fire stations. Fire safety and suppression resources are available from the various agencies in the event of a fire. In California, responsibility for wildfire prevention and suppression is shared by federal, state, and local agencies. Federal agencies are responsible for lands in Federal Responsibility Areas (FRAs). The State of California has determined that non-federal

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<sup>170</sup> More information about CALFIRE's classification system is available online at: [http://www.fire.ca.gov/fire\\_prevention/fhsz\\_maps\\_siskiyou](http://www.fire.ca.gov/fire_prevention/fhsz_maps_siskiyou) (Accessed December 21, 2018).



lands in unincorporated areas with watershed value are of statewide interest and have classified those lands as State Responsibility Areas (SRAs), which are managed by CALFIRE. CALFIRE enforces their respective state laws and regulations and coordinate fire support with the local agencies. There are no Local Responsibility Areas (LRAs) (e.g., incorporated areas) near the Proposed Project area and less than two square miles of FRA's (see Figure 3.21-2). The Fire Management Plan (page 29) notes that KRRC's contractor would contact the CALFIRE SU Prevention Specialist during development of detailed, site-specific fire management plans and would be in frequent contact with the pertinent fire suppression agencies during construction to discuss fire hazards, prevention, suppression, and contingency plans.

Siskiyou County is located in the CALFIRE Siskiyou Unit. The CALFIRE Siskiyou Unit encompasses 1.2 million acres of ecologically diverse wildlands. Most of the large fires in the CALFIRE Siskiyou Unit over the past 50 years have been wind-driven fires. Lightning, equipment use, and debris burning have historically been the determined primary ignition sources for these large fires (CALFIRE 2016).

As discussed in Section 3.17 *Public Services*, the Proposed Project area is located within the Shasta Valley Battalion (Battalion 2) of the CALFIRE Siskiyou Unit. Battalion 2 consists of two CALFIRE stations: one in the City of Yreka and one in the community of Hornbook; both stations provide fire protection services year-round. Paradise Craggy serves as the fire lookout for the Shasta Valley Battalion and is staffed with only emergency personnel during high-fire danger days and during and after lightning storms (CALFIRE 2016).

Fuel types consist of grass, brush, and timber that cover flat, rolling hills, and mountainous terrain. Battalion 2 includes a substantial wildland urban interface that includes many dispersed houses within the wildland areas. Much of the fire prevention efforts by Battalion 2 are focused on reducing the potential for large fire losses through public education and enforcement of Public Resources Code Section 4291, which requires up to 100 feet of fuel reduction around structures (CALFIRE 2016).

As shown in Table 3.21-3, approximately 10,624 acres burned between 2010-2015 in the CALFIRE Battalion 2 Unit SRA. In past years many of the Battalion's fires have started in LRA land and have threatened to burn SRA land. These fires were found to have the same causes as the SRA fires. (CALFIRE 2016). Wildfires originating in Oregon (such as the Oregon Gulch Fire in 2014) in the vicinity of the Klamath River also pose hazards to structures and public health within and adjacent to the Proposed Project area. Of note, from the below tables, the Oregon Gulch Fire burned 9,464 acres in California, meaning only 1,160.55 acres burned as a result of lightning fires the remaining six years. The next two largest categories for acres burned are from debris burning and equipment.

Table 3.21-3. 2010-2015 Battalion 2 Fire Causes.

<b>Shasta Valley Battalion 2010-2015 Causes</b>	<b>Number by Cause</b>	<b>Acres Burned</b>
Undetermined	38	31.6
Lightning Fires	55	10,211.68
Campfire	7	0.22
Smoking	3	0.21
Debris Burning	65	2.5
Debris Burning with Escape	18	130.93
Arson	13	3.15
Equipment	22	223.45
Playing With Fire	3	0.30
Vehicle	9	10.05
Railroad	0	0
Electrical Power	5	7.4
Miscellaneous/Other	16	3.06
<b>Totals</b>	<b>254</b>	<b>10,624.55</b>

Source: CALFIRE 2016

CALFIRE Incident Information (CALFIRE 2018) noted the following wildfires that occurred in the general area of the Proposed Project between 2010 and 2018.

Table 3.21-4. 2010-2018 Incident Information.

<b>2010–2018 Incidents</b>	<b>Date of Incident</b>	<b>Acres Burned</b>
Dutch Fire	July-August, 2010	371
Oregon Gulch Fire	July, 2014	9,464 in CA
Bogus Fire	June, 2017	56
Klamathon Fire	July, 2018	38,008
Iron Gate Fire	October, 2018	15

Source: CALFIRE 2018

During the dry season, areas surrounding the Proposed Project are at risk for fires, particularly at the interface between residential development and open space. The fire threat is high to very high in the areas surrounding the Proposed Project (CALFIRE 2007). The Klamathon Fire that started in July 2018 and burned 38,008 acres resulted in 82 structures destroyed, 12 structures damaged, one fatality and three injuries. Fire suppression is dependent on both air drops and ground crews, requiring a readily available source of water for helicopter fire suppression and ground crews fighting fires in the vicinity of the wildfire. The use of fire retardant, from fixed wing aircraft, is replenished from nearby airports or other places that aircraft can land and not dependent on sources of water.

Fire protection in the area of analysis is provided by federal agencies, the state forestry and fire prevention agencies, and a variety of city, county, and volunteer fire stations. Federal agencies include the USDA Forest Service, which is responsible for wildland fire protection on National Forest lands and providing assistance to other federal entities when requested, and the BLM, which is responsible for wildland fire protection on land managed by the BLM and for providing assistance to other federal, state, and local agencies when requested.

Fire protection at the state level is provided by CALFIRE in California, who, in conjunction with county and volunteer fire departments, is also responsible for fire protection throughout the unincorporated areas of the state. As discussed above, there are two CALFIRE stations in the vicinity of the Lower Klamath Project; Yreka, and Hornbrook. In Oregon, the Oregon Department of Forestry responds to wildland fires in the state resource areas and on federally managed lands. The Oregon Department of Forestry works with the BLM and the USDA Forest Service to prevent and fight wildfire on the federally managed lands as well.

City-operated fire stations include the Yreka Fire Department and the Mount Shasta Fire Department. There are also county fire stations throughout the Proposed Project area, including the Copco, Happy Camp, Seiad Valley, Etna, Fort Jones, Montague, Butte Valley, McCloud, Dunsmuir, and Mount Shasta fire departments (CPF Fire Department Directory 2017). The nearest fire stations to the Proposed Project area are the Copco Fire Department, Keno Rural Fire Protection District Station (in Oregon east of Keno Dam), Yreka Fire Department, and the Colestin Rural Fire Protection District (in Oregon northwest of Iron Gate Dam). The Colestin Rural Fire Protection District and the Hilt Fire Company in Northern California operate as one agency out of geographic necessity. Legally, however, they are two separate entities. The Hilt volunteer fire department jurisdiction includes the California side of the Colestin Valley, and also part of northern Siskiyou County, down to the Hornbrook boundary (Colestin Rural Fire District 2017). Each of these stations would have their own localized source of water for keeping their equipment full, but most would dependent on the reservoirs, the Klamath River, or other streams and sources for refilling at sources closer to a particular fire.

According to Appendix B: *Definite Plan –Appendix O1 Fire Management Plan*, the Fire Management Plan would include, among other items, details on: (1) establishing effective communication links between fire protection services and all personnel on the Proposed Project site; (2) compliance with all applicable regulations and federal and state guidelines (including CALFIRE 1999); (3) assessing weather conditions; (4) identifying all fire suppression infrastructure and emergency resources; (5) coordinating with nearby fire protection services; (6) routinely checking all fire abatement equipment and water storage on site; (7) establishing an up-to-date map of current helicopter fire suppression resources throughout the construction period; and (8) construction, utilizing, and maintaining proposed dry hydrants.

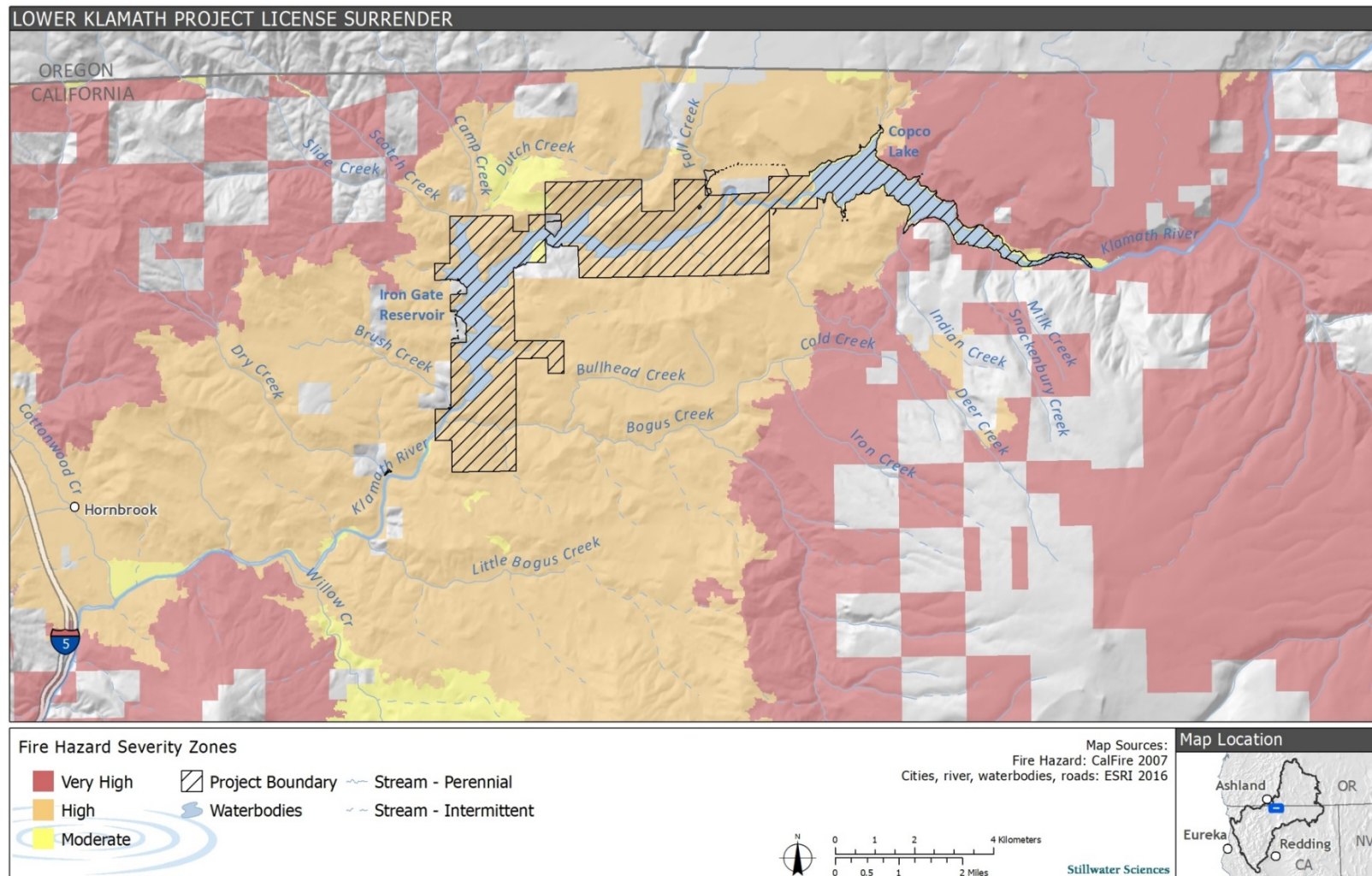


Figure 3.21-2. Map of CALFIRE Fire Hazard Severity Zones with Proposed Project Boundary Depicted (Source: CALFIRE 2007).

### 3.21.3 Significance Criteria

Criteria for determining significance of hazards and hazardous materials is informed by Appendix G of the CEQA Guidelines (California Code of Regulations title 14, section 15000 et seq.) and based on professional judgment. Effects of hazards and hazardous materials are considered significant if the Proposed Project would result in one or more of the following:

- Substantial exposure to hazardous materials, where substantial is defined as quantities of hazardous, or acutely hazardous, materials that would be harmful to the public or the environment.
- A substantial safety hazard for people residing or working in the Area of Analysis due to an increase in the risk of air traffic accidents.
- Impaired implementation of, or physical interference with, an adopted emergency response plan or emergency evacuation plan that would result in harm to the public or to the environment.
- A substantial increase in the risk of loss, injury or death involving wildland fires.

### 3.21.4 Impact Analysis Approach

The approach to impact analysis for hazards and hazardous materials includes an evaluation of the Proposed Project's transport, use, disposal and potential release of hazardous materials within the context of existing environmental setting. This section also describes the proximity of Proposed Project activities to schools, evaluates the existing known and unknown contaminants and contaminated sites within the Area of Analysis for hazards and hazardous materials, identifies airport locations, evaluates emergency response plans, and addresses wildfire hazards.

The analysis of the Proposed Project primarily focuses on the short-term construction-related activities and impacts that would cause the removal of existing hazardous materials. An increased need for emergency services is likely during construction activities and, as described in Section 3.22 *Transportation and Traffic*, project-related equipment and debris hauling may conflict with the ability to provide required emergency services. Consideration has been provided for the potential for accidental release of hazardous materials during routine transport along roadways that would be shared with public vehicles, where the latter could include school busses when school is in session (September to June). The analysis of wildfires considers the potential increase for wildfires during construction activities and as a result of restoration activities, as well as potential long-term impacts related to the loss of the reservoirs for future fire-fighting purposes.

The potential for aquatic species and human exposure to inorganic and organic contaminants due to sediment release associated with dam removal under the Proposed Project is discussed in Section 3.2.5.7 *Inorganic and Organic Contaminants*.

Local regulations pertaining to impacts analyzed in this section include Siskiyou County General Plan policies (i.e., Policies 30 Wildfires, 41.9 Adequate access) and solid waste regulations such as the Countywide Source Reduction and Recycling Element and Siskiyou County Code of Ordinance Title 5, Chapter 1 Garbage and Refuse Disposal. Other local regulations that may indirectly pertain include those of the Siskiyou County Environmental Health Department, and the Siskiyou County Air Pollution Control District.

### 3.21.5 Potential Impacts and Mitigation

**Potential Impact 3.21-1 Proposed construction-related activities could result in substantial exposure to hazardous materials through the routine transport, use, or disposal of hazardous materials.**

The Proposed Project would not result in the long term routine transport, use, or disposal of hazardous materials since the Proposed Project is the removal of existing dams and their associated hydroelectric facilities, and, once completed, the Proposed Project would not involve the continued use, transport or disposal of hazardous materials. However, in the short term, construction-related dam removal would involve routine transport, use, and disposal of general construction waste materials (e.g., concrete, rebar, building waste, power lines; see also Appendix B: *Definite Plan – Sections 5.3–5.5*) and some hazardous materials (e.g., treated lumber, asbestos, lead, PCBs, fuels, gases, etc.) would be encountered, used, transported and disposed of during those construction activities.

The Proposed Project Phase 1 Environmental Site Assessment for hazardous materials is underway but has not yet been completed. A Phase 2 Environmental Site Assessment for hazardous materials would be undertaken, as needed. Existing information regarding hazardous waste associated with the Lower Klamath Project dams and its facilities indicates that creosote or other treated wood is present, including 700 tons of treated wood waste from the wooden-stave penstock at Copco No. 2 Dam, as well as batteries, possible PCBs from transformers and other electrical equipment, asbestos-containing materials in building materials, fuels and oils, flammable and combustible liquids, flammable and nonflammable gases, corrosives, concrete dust (if it generates high pH waste), and soils or other material contaminated with lead from the use of lead-based paints or plumbing (see additional detail in Appendix B: *Definite Plan – Appendix O3*).

Demolition and disposal of structures containing the aforementioned hazardous materials, or others determined as part of Phase 1 investigations (and Phase 2, as needed), under the Proposed Project could result in exposure to quantities of hazardous, or acutely hazardous, materials that would be harmful to the public or the environment due to accidental releases and thus could result in a significant impact. Operation of construction equipment in close proximity to aquatic environments could involve equipment failures that would also result in the public or the environment being exposed to hazardous materials due to petroleum spills. Because the Proposed Project is located in a sensitive environment (i.e., along the Klamath River) and consists of substantial demolition activities, the increased amount of construction-related activity relative to existing conditions would increase the risk of exposing the public or the environment to quantities of hazardous, or acutely hazardous, materials that would be harmful. This would be a significant impact.

The Proposed Project includes an assessment of roads, intersections, bridges and culverts (Appendix B: *Definite Plan – Appendix K*) within the Area of Analysis for hazards and hazardous materials and proposes a number of improvements to help reduce the potential for accidental release of hazardous materials during transport of these materials to and from the dam sites. The proposed replacements and upgrades to transportation structures, as well as proposed construction-related traffic management, including signage, flaggers, and traffic coordination (Appendix B: *Definite Plan –*

Appendix O2), would reduce the risk of traffic accidents that could result in exposure to quantities of hazardous, or acutely hazardous, materials that would be harmful to the public or the environment.

Further, existing federal and state regulations require the KRRRC and its construction contractors to undertake a number of measures related to hazardous materials. KRRRC is developing a dam safety program that would ensure that removal of the Proposed Project would be undertaken in a manner that minimizes risk to people, structures, infrastructure, and the natural resources of the Klamath River Basin (Appendix B: *Definite Plan – Section 3*). Such removal would fully comply with FERC's dam safety requirements, and it would be consistent with FERC Engineering Guidelines (FERC 2017). In addition, the below list of state and federal regulations include requiring, for example, that the KRRRC and its contractors keep an inventory of hazardous materials at each dam facility and the intention for final disposition of these materials. The KRRRC and its contractors are required to describe the storage, spill prevention, and cleanup measures, including the deployment and maintenance of spill cleanup materials and equipment at each facility/site to contain any spill from Proposed Project activities. Onsite containment for storage of chemicals classified as hazardous is required to be away from watercourses and include secondary containment and appropriate management as specified in California Code of Regulations, Title 27, Section 20320.

The KRRRC and its contractors are also required to comply with the terms and conditions in the State Water Board's *National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities* (Construction General Permit; State Water Board Order 2009-0009-DWQ, as amended by State Water Board Orders 2010-0014-DWQ and 2012-0006-DWQ), and ongoing amendments during the life of the Proposed Project.), Hazardous materials, substances, and waste within the Area of Analysis for hazards and hazardous substances are regulated by several other federal and state laws and policies, some of which are listed below. Compliance with required regulations would substantially minimize the potential impact of hazardous materials on the public and the environment during the routine transport, use, or disposal of hazardous materials.

#### *Federal Regulations*

- Resource Conservation and Recovery Act (42 USC 6901 et seq.)
- Hazardous Materials Transportation Act (49 USC Section 1801 et seq.)
- Clean Water Act (33 USC 1251 et seq.)
- Comprehensive Environmental Response Compensation and Liability Act and
- Superfund Amendment Reauthorization Act (SARA) (43 USC 9601 et seq.)
- 40 CFR 260-279 Federal Regulations on hazardous waste management
- 40 CFR 301 et seq. Emergency Planning and Community Right to Know Act
- Toxic Substances Control Act (15 USC 2601 et seq.)

#### *State Regulations*

- California Hazardous Waste Control Law (California Health and Safety Code [HSC] Section 25500 et seq.)
- Carpenter-Presley-Tanner Hazardous Substances Account Act (HSC Section 25300 et seq.)



- Unified Hazardous Waste and Hazardous Materials Management Regulatory Program (HSC Section 25404 et seq.)

The Proposed Project also includes Appendix B: *Definite Plan – Appendix O3 Hazardous Materials Management Plan*. The Hazardous Materials Management Plan states that all hazardous materials removed within the Project Boundary would be either returned to the vendor, recycled, or managed and disposed of as hazardous waste at an approved hazardous waste facility in accordance with applicable regulations. Transformer oils would be tested for PCBs if no data exist. Any tanks that contain hazardous materials would be decontaminated prior to disposal. Universal hazardous waste (e.g., lighting ballasts, mercury switches, and batteries) would be handled per applicable federal and state universal waste regulations. The Hazardous Materials Management Plan notes that any additional hazardous materials noted during the Phase 1 site visits and Phase 2 investigations would be included in an updated Hazardous Materials Management Plan and the contractor would sample and test for asbestos, lead and PCB's at all structures to be removed. The Hazardous Materials Management Plan is required to comply with, among other regulations, California Health and Safety Code, title 27, division 20, chapter 6.95, sections 25500 through 25545, and California Code of Regulations title 19, division 2, chapter 4.

Overseeing development and implementation of the Final Hazardous Materials Management Plan falls within the scope of the State Water Board's water quality certification authority. While the KRRC has stated its intention to be consistent with the water quality certification from California, at this time the Hazardous Materials Management Plan is not finalized. Therefore, implementation of Mitigation Measure HZ-1 is required to reduce the short-term, construction-related risk of exposing the public and/or the environment to harmful quantities of hazardous, or acutely hazardous, materials during their transport, use, and disposal under the Proposed Project to less than significant.

#### Mitigation Measure HZ-1 – Hazardous Materials Management.

No later than six months following issuance of the FERC license surrender order, and prior to the start of pre-dam removal activities and any construction activities, the KRRC shall submit a Final Hazardous Materials Management Plan (Final Hazardous Materials Management Plan) to the State Water Board Deputy Director for review and approval. The State Water Board has authority to review and approve any final Hazardous Materials Management Plan through its water quality certification under Clean Water Act Section 401. The State Water Board has issued a draft water quality certification<sup>171</sup> which sets forth monitoring and adaptive management requirements for any Hazardous Materials Management Plan to meet, as Condition 11. Additionally, the Oregon Department of Environmental Quality has issued a water quality certification<sup>172</sup> that sets forth water quality monitoring and adaptive management conditions for points upstream of California.

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<sup>171</sup> The State Water Board's draft water quality certification is available online at: [https://www.waterboards.ca.gov/waterrights/water\\_issues/programs/water\\_quality\\_cert/docs/lowe\\_r\\_klamath\\_ferc14803/lkp\\_dwqc.pdf](https://www.waterboards.ca.gov/waterrights/water_issues/programs/water_quality_cert/docs/lowe_r_klamath_ferc14803/lkp_dwqc.pdf) (Accessed December 19, 2018).

<sup>172</sup> The Oregon Department of Environmental Quality's final water quality certification is available online at: <https://www.oregon.gov/deq/FilterDocs/ferc14803final.pdf> (Accessed December 21, 2018).



Consistent with the above, the Final Hazardous Materials Management Plan shall include any modifications to the proposed Hazardous Materials Management Plan developed in coordination with State Water Board staff that provide the same or better level of protection regarding procedures for proper disposal or abatement of hazardous materials encountered during Proposed Project activities; proper storage, containment, and response to spills caused by the Proposed Project; and proper removal and disposal of septic tanks as part of the Proposed Project.

The Final Hazardous Materials Management Plan shall also describe how the elements of the KRRC's proposed Health and Safety Plan (Appendix B: *Definite Plan – Appendix O4*), the Spill Prevention, Control, and Countermeasure Plan (Appendix B: *Definite Plan – Appendix O4*), the Emergency Response Plan (Appendix B: *Definite Plan – Appendix O4*), and the Traffic Management Plan (Appendix B: *Definite Plan – Appendix O2*) are coordinated together, and as such, adequately protect water quality with respect to hazardous materials management.

The KRRC shall implement the Final Hazardous Materials Management Plan upon receipt of State Water Board Deputy Director approval and any changes to the Hazardous Materials Management Plan must be approved by the State Water Board Deputy Director prior to implementation.

The KRRC shall provide monthly reporting to the State Water Board detailing the volumes of hazardous materials and wastes that were cleaned up and disposed of from site construction activities and any other modifications to the proposed Hazardous Materials Management Plan developed in coordination with State Water Board staff.

#### Significance

*No significant impact with mitigation*

Potential Impact 3.21-2 Proposed construction-related activities could result in substantial exposure to hazardous materials through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

See also discussion under Potential Impact 3.21-1. A reasonably foreseeable condition that could result in an upset involving the release of hazardous materials into the environment would occur from such natural events, such as earthquakes, floods or fires or from accidents during construction activities. Fuel storage tanks used for construction could rupture or spill and hazardous materials could be carried away by floodwaters. Proposed Project workers, the public sharing the roads with construction vehicles, and/or the environment could be exposed to harmful levels of hazardous materials due to accidental releases during construction activities. Accidental release of hazardous materials (from vehicle fuels, solid waste, materials and supplies) could also occur during transport as a result of vehicular accidents due to increased construction-related traffic and/or as a result of inadequacies in the capacity, design or traffic control of the roads that would be used for construction-related activities (Figure 3.22-1). Any of these situations under the Proposed Project would result in a significant impact.

Appendix B: *Definite Plan – Appendix O2 Traffic Management Plan*, Appendix O3 *Hazardous Materials Management* and Appendix O4 *Emergency Response Plan* complement one other with respect to pre-planning and response efforts to minimize the risk of potential upset and accident conditions involving the release of hazardous

materials. Since the responsibility of finalizing these plans fall on the KRRC and the construction contractors, Mitigation Measure HZ-1 assures that the contractor(s) are aware of the federal and state requirements and submit updated plans that are geared towards their strategies and methods for addressing this issue.

With implementation of Mitigation Measure HZ-1, impacts due to potential upset and/or accidental release of hazardous materials that result in substantial exposure to the environment during the proposed short-term, construction-related activities would result in a less than significant impact.

#### Significance

*No significant impact with mitigation*

Potential Impact 3.21-3 Proposed construction-related activities could result in substantial exposure to hazardous materials through emissions or handling of substances or waste within one-quarter mile of an existing or proposed school. Hazardous emissions and acutely hazardous materials generally can have a greater impact than other types of hazardous materials, especially if they are present within one-quarter mile of a school. There are no hazardous emissions proposed from a manufacturing process under the Proposed Project. Short-term operational emissions due to construction-related activities under the Proposed Project are discussed in Section 3.9 *Air Quality* and Section 3.10 *Greenhouse Gases*. Hazardous materials and wastes are addressed in Potential Impacts 3.21-1 and 3.21-2.

Existing schools are more than five miles away from construction-related activities (Section 3.21.2.2 [*Hazards and Hazardous Materials*] *Environmental Setting – School Proximity*), thus the Proposed Project would not involve handling of hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of a school.

#### Significance

*No significant impact*

Potential Impact 3.21-4 The Proposed Project could be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, could result in substantial exposure to hazardous materials.

The Proposed Project is not located on a site which is currently included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. However, no Phase 1 or 2 reports have been submitted to make the determination of whether portions of the Proposed Project Area should be included on the lists. The type of use and activities and the length of time these activities have been occurring within the Proposed Project Area suggest the possibility that contaminated sites/soils exist on site. Therefore, the risk remains that contaminants exist on the site that could result in a substantial exposure that would be harmful to the public or the environment. The Proposed Project could also result in a significant impact if the project involved activity in areas that contained contaminated substances that would result in substantial exposure to the public or the environment. Crucial to this analysis would be the analysis of what contaminants exist on the site. This is typically ascertained by completion of a Phase 1 Environmental Analysis and, when necessary, a follow up with a Phase 2 Environmental Analysis.

Appendix B: *Definite Plan* – Appendix O3, Table 1 identified contaminated soils as a type of hazardous material that could be present at each dam location. As noted in Section 3.21.2.3 *Contaminants/Contaminated Sites*, there are several sites that may be contaminated with hazardous substances in the vicinity of the Proposed Project. Thus, the Proposed Project could result in an impact from known and unknown contaminants if, during construction activities, these materials are not handled and disposed of properly (i.e., according to state and federal regulations). For instance, dioxins and dioxin-like substances, including PCBs, are persistent in the environment and accumulate in the food chain. Human exposure to dioxins has been associated with a range of toxic effects. They are also a known human carcinogen. PCBs are found in industrial oils, old electric transmission lines, and substations. PCBs are currently listed as a potential type of hazardous waste present at the Copco No. 1, Copco No. 2, and Iron Gate dams (Appendix B: *Definite Plan* – Section 5). If these contaminants are present in the soil in substantial quantities there is the potential for exposure at levels that would be harmful to the public or the environment. This would be a significant impact.

Based on the age of the structures at Iron Gate Dam, the concrete in the structures may contain fly ash, which has raised concerns in the past about the presence of mercury or other toxic substances. Without proper protections, these contaminants can leach into groundwater and potentially migrate to drinking water sources, posing public health concerns. While USEPA recognizes the beneficial uses of fly ash and considers it safe when it is encapsulated in concrete or other building materials (USEPA 2016), construction activities include drilling and cutting into the large quantities of concrete slated for removal under the Proposed Project (i.e., greater than 100,000 yd<sup>3</sup>) (Table 2.7-3, Table 2.7-4, and Table 2.7-7) could result in dust that releases toxic substances and would be harmful to the public or the environment. This would be a significant impact.

In addition to the measures included in the Proposed Project, Mitigation Measure HZ-1 would be necessary to ensure that adherence to existing regulations are included in contractor bid documents. This includes that the findings of the Phase 1 and Phase 2 Environmental Site Assessment reports would need to be added to the Hazardous Materials Management Plan and Health and Safety Plan. With implementation of Mitigation Measure HZ-1, potential impacts due to exposure to hazardous materials during the proposed construction-related activities would be less than significant.

### **Significance**

*No significant impact with mitigation*

**Potential Impact 3.21-5** The Proposed Project could result in, for a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, a substantial safety hazard for people residing or working in the project area due to a risk of traffic accidents.

**Potential Impact 3.21-6** The Proposed Project could result in, for a project within the vicinity of a private airstrip, a substantial safety hazard for people residing or working in the project area due to a risk of traffic accidents.

The below analysis applies for both Potential Impacts 3.21-5 and 3.21-6.

The Proposed Project could result in a substantial safety hazard from air traffic accidents if it was located near an airport's area of influence or resulted in height obstructions that would result in air traffic accidents. Siskiyou County Airport is more than 10 miles south of Iron Gate Dam in Montague. Pinehurst State Airport in Oregon is located approximately nine miles north of Copco No. 1 Reservoir. There are no public or private airports within two miles of the Lower Klamath Project nor would any activities of the surrounding airports or airfields adversely affect the Proposed Project area. The 2001 Siskiyou County Airport Land Use Compatibility Plan does not extend as far north as the Proposed Project. There is also no aspect of the Proposed Project that would adversely affect any nearby airports or private airstrips. (see also Section 3.21.2.4 *Nearby Airports*). Overall there would be no impact.

### Significance

#### *No significant impact*

**Potential Impact 3.21-7 Proposed construction-related activities could impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan.**

The Proposed Project would not directly conflict with any adopted emergency response plan or emergency evacuation plan. However, the Proposed Project could result in short-term construction-related impacts consisting of an increase in traffic on narrow rural roads from commuting workers, hauling of large equipment and disposal of wastes. This additional traffic could result in interference to emergency response vehicles as well as create a situation requiring additional need for emergency response due to personal and vehicular accidents, natural and worksite caused fires, and accidental releases of hazardous materials. This would be a significant impact. To prevent or reduce impacts to emergency response, a carefully orchestrated plan that avoids interfering with off-site emergencies as well as accommodates the need for emergencies resulting from the Proposed Project needs to be developed and disseminated amongst both workers and responders.

The Proposed Project (Section 2.7.8.11 *Emergency Response*) contains a brief description of an Emergency Response Plan (for details see Appendix B: *Definite Plan—Appendix O4*). According to that document, construction contractors would be required to develop a Final Emergency Response Plan to develop and implement procedures to help prevent incidents, to ensure preparedness in the event incidents occur, and to provide a systematic and orderly response to emergencies. The Final Emergency Response Plan needs to be closely coordinated with the contractor's Health and Safety Plan, Spill Prevention and Response Plan, Traffic Management Plan, and Fire Management Plan. Procedures documented in the Final Emergency Response Plan would apply to all personnel working on site. Prior to commencing construction activities, the contractor's Health and Safety lead would review emergency response procedures with all personnel assigned to the site to the extent necessary.

Applicable emergency scenarios include, but are not limited to, the following:

- Medical emergency
- Fire management
- Traffic incident
- Hazardous material spill management

- Downstream hydraulic change planning (e.g., flooding-related hazards)
- Dam or tunnel failure
- Catastrophic emergency (e.g., earthquake, high wind event, etc.)
- Security threat

Each type of emergency and its associated plan requirements are discussed in more detail in Appendix B: *Definite Plan – Appendix O4* Emergency Response Plan.

An increased need for emergency services may occur during peak construction activities under the Proposed Project, and, as described in Sections 3.17 Public Services and 3.22 *Transportation and Traffic*, this may conflict with the ability of entities to provide those services. As discussed in Section 3.21.2 *Environmental Setting* (as well as Section 3.22 *Transportation and Traffic*), there is the possibility that the combination of existing and project-related traffic may cause conflicts within the existing road system, preventing the level of emergency response that is available under existing conditions, particularly given the rural nature of the Area of Analysis for hazards and hazardous materials. This would be a significant impact. To reduce potential impacts all construction workers would require the knowledge and resources to adequately respond to emergencies, where emergency preparation and work should be overseen by a designated health and safety manager. In addition, responding agencies/departments should be made aware of the activities during the construction period so that they can implement their existing regulatory framework, establish an emergency contact process, and undertake inspections as needed throughout project implementation.

The draft Traffic Management Plan (Appendix B: *Definite Plan – Appendix O2*) further notes that the KRRC's contractor would perform a risk assessment of all intersections and roadways as part of the final Traffic Management Plan. Implementation of Recommended Measure TR-1 would require additional components beyond those listed as part of the Proposed Project (i.e., the final versions of the Traffic Management Plan and Emergency Response Plan) and these components would be necessary to adequately implement an Emergency Response Plan that addresses short-term construction-related impacts, consisting of an increase in traffic on narrow rural roads from commuting workers, hauling of large equipment and disposal of wastes, to the point that the potential impact would be less than significant.

Overseeing development and implementation of the final Traffic Management Plan and Emergency Response Plan, including measures described in Recommended Measure TR-1, does not fall within the scope of the State Water Board's water quality certification authority. While the KRRC has stated its intention to reach enforceable good citizen agreements that will be finalized and implemented, at this time the Traffic Management Plan and Emergency Response Plan are not finalized and the State Water Board cannot require their implementation. Accordingly, the State Water Board anticipates that implementation of the final Traffic Management Plan and Emergency Response Plan, including the aforementioned additional details in Recommended Measure TR-1 and any modifications developed through the FERC process that provide the same or better level of protection for transportation and traffic would reduce impacts to less than significant. However, because the State Water Board cannot ensure implementation of the final Traffic Management Plan and Emergency Response Plan, it has determined the impact in this Draft EIR to be significant and unavoidable.

## Significance

### *Significant and unavoidable*

**Potential Impact 3.21-8 Proposed construction-related activities and/or removal of the Lower Klamath Project reservoirs could substantially increase the public's risk of loss, injury, or death associated with wildland fires.**

The short-term potential for the public's increased risk from wildfires would occur during implementation of the Proposed Project if construction activities are not conducted consistent with adequately developed fire management and emergency response plans. As described under Potential Impact 3.21-7, providing all construction workers with the knowledge and resources for preventing and suppressing fires and requiring that all emergency preparation and work activities are overseen by a designated 'Safety Officer' would reduce the potential for short-term construction-related impacts of the Proposed Project to increase risk associated with wildland fires. The Proposed Project would be subject to a number of regulations and guidance documents, implemented by the various fire suppression services. Public Resources Code section 4423 et seq. include a number of requirements related to construction activities. CALFIRE's Industrial Operations Fire Prevention Guide (CALFIRE 1999) includes additional guidance.

Currently the Proposed Project includes versions of the Fire Management Plan and the Emergency Response Plan (Emergency Response Plan), leaving some of the details to the KRRC or selected contractor to provide. The Proposed Project Fire Management Plan (see Appendix B: *Definite Plan – Appendix O1*) responds to the above requirements and other fire prevention and response methods including fire precaution, pre-suppression, and suppression measures consistent with the policies and standards in the affected jurisdictions and provisions. The Fire Management Plan contains additional details, including the following bulleted items:

- Designate a Safety Officer
- Comply with all federal, state, and local regulations
- Assure fire suppression tools and water pumping systems on site
- Assure spark arresters on all equipment and vehicles
- Establish ongoing communication with fire suppression agencies
- Manage all work areas to reduce fire risk

Implementation of the proposed Fire Management Plan would result in a less than significant short-term construction-related impact because the measures contained within would substantially decrease the risk of wildland fires and hence the risk of loss, injury or death involving these fires.

Removal of the reservoirs as a source of water for fire suppression could substantially increase the public's risk of loss, injury, or death associated with wildfires if other sources of water are not readily available, and could result in an increased source of wildfire fuel in the form of dead trees around the former reservoir shorelines. Each of these potential impacts is discussed further below.

The Proposed Project would result in the removal of one readily available water source for wildfire services or increased emergency response times if other sources of water are not as readily available. Under the Proposed Project, removal of the Copco No. 1, Copco No. 2, and Iron Gate reservoirs would remove a long-term water source for fire

suppression crews after the reservoirs are removed. The removal of the reservoirs could increase turn-around time for helicopters or ground crews refilling with water for fire abatement purposes. However, the initial response times for existing aircraft with fire retardant would not be changed by the loss of the reservoirs. Following dam removal, helicopters and ground crews would still be able to extract water from the Klamath River (both the current channel and the channel reaches to be exposed in the current reservoirs following drawdown), Lake Ewauna, and Upper Klamath Lake. Retrieving water directly from the Klamath River is consistent with how wildfires are suppressed along the Klamath River downstream of Iron Gate Dam under current conditions. Ground crews would be adversely affected unless access to Klamath River water continues to be supported under the Proposed Project. Loss of the reservoirs would not affect the use of fire retardant, which is loaded onto aircraft at regional airports (i.e., Redding, Montague, Klamath Falls) and then applied directly to wildfire sites.

With respect to Klamath River access, most helicopter water tanks require three feet of water depth to fill properly, so only deeper pools in the Klamath River would be able to be used by helicopters. CALFIRE uses the closest available water source that is suitable for fire-fighting, where suitability is determined by local conditions including water flow, depth of pool (2- to 3-foot minimum), amount of debris in pool, shoreline vegetation, and surrounding terrain. Rotor blade length and the length of bucket lines are also determinants, since there must be a safe amount of space to enter and exit the pool site. Individual pilots use their discretion to determine the closest and safest locations from which to withdraw water.

Analysis of aerial photos (Google Maps 2018) suggests the presence of pools with suitable conditions for helicopter filling in the currently free-flowing reaches of the Middle and Upper Klamath River, particularly in the reaches between Copco No. 1 and J.C. Boyle reservoirs and downstream of Iron Gate Dam. While source water would be available in the Klamath River in pools located in the river reaches exposed following reservoir drawdown, the travel time involved in accessing the newly formed pools would be greater than that for the existing Lower Klamath Project reservoirs because retrieval of water from relatively smaller, more narrow, river pools is more difficult than dipping directly from the broad water surface of a lake or reservoir, and only one helicopter at a time would have access to a given river pool versus multiple helicopters that can draw at one time from a large reservoir. Thus, response and travel times between water fills for helicopter crews would be expected to increase with the loss of the reservoirs. Wildfires can spread at a rapid speed, and involve high risks. Any amount of additional response time compared with existing conditions could result in a substantial increased risk of loss, injury, or death involving wildland fires and this would be a significant impact.

To compensate for the loss of reservoir water supply, the Proposed Project includes providing alternate water supply through dry hydrants that would be accessible to ground crews following removal of the dams. Flows in the Klamath River and tributaries are not expected to substantially change post-dam removal, as compared to current flows, and firefighting ground crews could still use the river as a water supply as long as physical access to water is provided. A dry hydrant is a passive, unpressurized system, with a screened intake placed in the channel above the channel bed. An above-ground fire hose is used to connect the intake to truck-mounted pumps (Figure 3.17-1). Placement of the dry hydrant must be in a location of satisfactory depth (during dry conditions), flow rate, and channel stability. The Definite Plan states that dry hydrants are commonly used as water supply for fighting fires in rural areas, and typical dry hydrants and fire

truck pumps can supply over 1,500 gallons per minute, which is sufficient for rapid filling of typical water tankers and firefighting apparatus (Appendix B: *Definite Plan – Appendix O1*).

To assist ground-based firefighting efforts, the Fire Management Plan proposes the development of eight sites near the Copco No. 1 Reservoir and four sites near the Iron Gate Reservoir for installation of permanent dry hydrants from which water trucks and fire engines could draw directly from the Klamath River and larger tributaries (Figures 3.17-2 and 3.17-3). The Proposed Project also includes an evaluation of the potential for riverine pool features to be used for helicopter water filling and development of an associated map of resources that can be used by air-based firefighting crews.

The proposed dry hydrants are likely to be of limited use for firefighting compared with existing conditions because only ground crews can access them (i.e., they are of no use to aerial crews that can access the reservoirs under existing conditions). Hook-ups to the dry hydrants would require standard specifications and existing CALFIRE pumper trucks would require special equipment such as hard suction lines (a flexible hose would collapse) to successfully draft from the dry hydrants. The ground crews would need to be able to get close to the river to draft from the dry hydrants because firetrucks typically can only lift water over short vertical distances (i.e., 10 to 14 feet, with a maximum 15-foot height from the intake) and drafting from bridges may require too much lift.

Decreased response time associated with dry hydrants as compared with aerial crew access of reservoir water via helicopters would be a significant impact since it would increase the risk of loss, injury, or death involving wildland fires. Direct withdrawal from the river using a boat ramp, pumping stations equipped with pumps connected to wells or deep pools in the river, above-ground storage tanks with ready access for transferring water to pumper trucks, are likely to be better options than the dry hydrants proposed by KRRRC because these alternatives would be easier to use and thus would reduce ground crew response time. Section 3.17 *Public Services* includes Recommended Measure PS-1 that requires the KRRRC or the Contractor's Safety Officer for the Proposed Project to submit a final Fire Management Plan after reaching agreement with CALFIRE Siskiyou Unit 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).

Loss of the Lower Klamath Project reservoirs could also increase the relative amount of dead woody vegetation compared with existing conditions, which would increase the fuel load by removing the reservoir shorelines and potentially affecting adjacent shallow groundwater levels. The potential for this effect would be limited to an approximate 300-foot wide band around the current reservoir shorelines, where root zones are within five to ten feet of groundwater. As noted in Section 3.5.2.1 *Vegetation Communities*, trees located outside of this 300-foot wide band would not be dependent on reservoir water as a significant source of water to tree roots. Conifers surrounding the reservoirs are considered drought-tolerant and would not be affected by the loss of the reservoirs but would remain as an existing fire hazard with or without the project. Riparian vegetation adjacent to tributary streams within the Area of Analysis for hazards and hazardous materials would continue to possess a source of water following dam removal since tributary stream flows would not be affected by the Proposed Project. In contrast, tree-dominated wet habitats surrounding the reservoir (i.e., Montane Riparian and Palustrine Forested Wetland [Section 3.5.2.1 *Vegetation Communities* and Appendix G]) would be likely to transition to upland habitats once the reservoirs are drawn down, and existing



trees such as Oregon Ash and bigleaf maple may become snags or ultimately fall to the ground. While this increase in the relative amount of dead woody vegetation compared with existing conditions would increase the public's risk of loss, injury or death associated with wildland fires within the Area of Analysis, there is a relatively small proportion of these wet habitat types within the 300-foot buffer surrounding the Lower Klamath Project reservoirs (Figure 3.5-4 and 3.5-5). Montane Riparian and Palustrine represent three percent and six percent, respectively, of the vegetation in the 300-foot buffer surrounding Copco No. 1 and 2 reservoirs; Montane Riparian and Palustrine represent one percent and four percent respectively, of the vegetation in the 300-foot buffer surrounding Iron Gate Reservoir. This affected area, where woody vegetation may die off from loss of the reservoirs as a source of water, is limited in extent and would not substantially increase the risk of loss, injury or death involving wildland fires as a result of the loss of the reservoirs.

The measures included in the Fire Management Plan would reduce the potential for short-term, construction-related impacts of exposing people or structures, either directly or indirectly, to risk of loss, injury, or death involving wildland fires both during and immediately after the dams are removed, and there would be no significant impact. However, in the long term, the loss of the reservoirs, which are currently part of the existing conditions, would result in a substantial decrease in fire protection involving wildland fires due to longer response times and limitations on access to Klamath River water for fighting fires within the Area of Analysis for public services. While the proposed dry hydrants would provide a source of water to ground crews for firefighting, they do not offer the same degree of access as helicopter use of the reservoirs for wildfires occurring in the vicinity of the Lower Klamath Project, for which the reservoirs are the closest and safest source of water for aerial crews. One option that would assist in mitigating this impact would be to include appropriately placed dip ponds within the Proposed Project's restoration areas.

Recommended Measure PS-1 requires the KRRC and/or its Contractor(s) to develop, in consultation with the CALFIRE Siskiyou Unit, an updated Fire Management Plan that identifies long-term water sources for helicopter and ground crews (including construction and use of proposed dry hydrants, dip ponds, or other alternatives). Overseeing development and implementation of terms and conditions relating to fire management does not fall within the scope of the State Water Board's water quality certification authority. The State Water Board anticipates that in the absence of the reservoirs, the identification and use of alternative water sources (e.g., dip ponds, river pools suitable for helicopter drafting, dry hydrants) for both ground and helicopter crews that are developed through the FERC process would significantly ameliorate response times and provide a level of protection to substantially reduce the public's risk of loss from wildfires, thereby reducing impacts to less than significant in many instances. However, where suitable replacement water sources cannot be identified in close proximity to a fire in a location for which the reservoirs would otherwise have been the nearest water source, long-term impacts to the public's risk of loss from wildfires remain significant and unavoidable.

#### Significance

*No significant impact in the short term*

*Significant and unavoidable impact in the long term*

### 3.21.6 References

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