

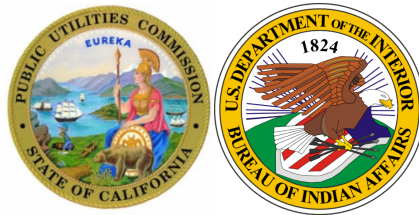
KLAMATH RIVER RURAL BROADBAND INITIATIVE

Draft Initial Study Mitigated Negative Declaration/Environmental Assessment

June 2022



Prepared for:
California Public Utilities Commission and Bureau of Indian Affairs



Prepared by:
Environmental Science Associates



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Acronyms and Abbreviations

°F	degrees Fahrenheit
AB	Assembly Bill
AC	alternating current
ACHP	Advisory Council on Historic Preservation
ADI	Area of Direct Impact
ADT	average daily traffic
AE	Agricultural Exclusive
AMP	Archaeological Management Plan
AMSL	above mean sea level
APE	Area of Potential Effects (cultural)
APM	Applicant Proposed Measure
APN	Assessor's Parcel Number
Applicant	Karuk Tribe
ASA	Archaeologically Sensitive Area
ASCE	American Society of Civil Engineers
ATCM	Airborne Toxic Control Measure
ATV	all-terrain vehicle
BACT	Best Available Control Technology
Basin Plan	Water Quality Control Plan for the North Coast Region
BG	block group
BHAD	Bald Hills Archaeological District
BIA	U.S. Bureau of Indian Affairs
BLM	U.S. Bureau of Land Management
BMP	best management practice
CAA	Clean Air Act
CAAQS	California ambient air quality standards
CAL FIRE	California Department of Forestry and Fire Protection
Cal OSHA	California Occupational Safety and Health Administration
CalEEMod	California Emissions Estimator Model
CalGEM	California Geologic Energy Management Division
California Register	California Register of Historical Resources
CalRecycle	California Department of Resources Recycling and Recovery
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CASF	California Advanced Services Fund
CBC	California Building Code
CCR	California Code of Regulations
CDFW	California Department of Fish and Wildlife
CDP	Census Designated Place
CDPR	California Department of Parks and Recreation
CEC	California Energy Commission
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act

CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Information System
CESA	California Endangered Species Act
CFPP	Construction Fire Prevention Plan
CFR	Code of Federal Regulations
CGS	California Geological Survey
CH ₄	methane
CHP	California Highway Patrol
CHRIS	California Historical Resources Information System
CLEC	Competitive Local Exchange Carrier
CNDDDB	California Natural Diversity Database
CNEL	community noise equivalent
CNPS	California Native Plant Society
CO	carbon monoxide
CO ₂	carbon dioxide
CO ₂ e	carbon dioxide equivalent
Construction General Permit	General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities
CPCN	Certificate of Public Convenience and Necessity
CPUC	California Public Utilities Commission
CRMP	cultural resources management plan
CRPR	California Rare Plant Rank
CSLC	California State Lands Commission
CSP	California State Parks
CSSC	California Species of Special Concern
CUPA	Certified Unified Program Agency
CWA	Clean Water Act
CWPP	Humboldt County Community Wildfire Protection Plan
cy	cubic yard(s)
dB	decibel(s)
dBA	A-weighted decibel(s)
DC	direct current
DOGGR	Division of Oil, Gas, and Geothermal Resources
DPM	diesel particulate matter
DTSC	California Department of Toxic Substance Control
DWR	California Department of Water Resources
EA	Environmental Assessment
EDD	California Employment Development Department
EFZ	earthquake fault zone
EIR	environmental impact report
EPA	U.S. Environmental Protection Agency
EO	Executive Order
EOC	emergency operations center
EOP	emergency operations plan
ESA	Endangered Species Act
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration

FHSZ	fire hazard severity zone
FLPMA	Federal Land Policy and Management Act
FMMP	Farmland Mapping and Monitoring Program
FNAE	Finding of No Adverse Effect
FONSI	Finding of No Significant Impact
Forest Plan	Six Rivers National Forest Land and Resource Management Plan
FRA	Federal Responsibility Area
FTA	Federal Transit Administration
GDR	Green Diamond Resource Company
GHG	greenhouse gas
GIS	Geographic Information System
GO	General Order
GWP	global warming potential
HCP	habitat conservation plan
HCAOG	Humboldt County Association of Governments
HCFA	Humboldt County Fire Chiefs' Association
HCFC	Humboldt County Fire Safe Council
HCWMD	Humboldt County Waste Management Department
HDD	horizontal directional drilling
HFTD	High Fire Threat District
HMMP	Hazardous Materials Management Plan
HSC	Health and Safety Code
HWMA	Humboldt Waste Management Authority
Hz	hertz
IBC	International Building Code
IOU	investor owned utility
IPCC	Intergovernmental Panel on Climate Change
IS	Initial Study
ITA	Indian Trust Asset
Karuk DNR	Karuk Tribal Department of Natural Resources
KRRBI	Klamath River Rural Broadband Initiative
kV	kilovolt(s)
last mile	the final leg of the telecommunications network that delivers telecommunication services to retail end-users (businesses or residences)
lb	pound(s)
Ldn	day-night average level
Leq	equivalent sound level
Lmax	maximum sound level
LOP	Local Oversight Program
LOS	level of service
LRA	local responsibility area
LRHD	Lyons Ranches Historic District
LUST	leaking underground storage tank
MBTA	Migratory Bird Treaty Act
Mbps	megabits per second

middle mile	provides connection between the “last-mile” facilities and the regional long-distance fiber optic network
mm	millimeter(s)
MM	Mitigation Measure
MMRCP	Mitigation Monitoring, Reporting, and Compliance Program
MND	Mitigated Negative Declaration
MP	milepost
mpg	miles per gallon
N ₂ O	nitrous oxide
NAAQS	national ambient air quality standards
NAGPRA	Native American Graves Protection and Repatriation Act
NAHC	Native American Heritage Commission
National Register	National Register of Historic Places
NCAB	North Coast Air Basin
NPS	National Park Service
NCUAQMD	North Coast Unified Air Quality Management District
NCRWQCB	North Coast Regional Water Quality Control Board
NEPA	National Environmental Policy Act
NFS	National Forest System
NHPA	National Historic Preservation Act
NHTSA	National Highway Traffic Safety Administration
NMFS	National Marine Fisheries Service
NO ₂	nitrogen dioxide
NOAA	National Oceanic and Atmospheric Administration
NOX	oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NPS	National Park Service
NRCS	U.S. Natural Resources Conservation Service
NSO	northern spotted owl
NWIC	Northwest Information Center
OAG	Office of the California Attorney General
OCSD	Orick Community Services District
OEHHA	Office of Environmental Health Hazard Assessment
OES	Office of Emergency Services
OHP	California Office of Historic Preservation
OHV	off-highway vehicle
OSHA	U.S. Occupational Safety and Health Administration
OVFD	Orick Volunteer Fire Department
PCB	polychlorinated biphenyl
PEA	Proponent’s Environmental Assessment
PG&E	Pacific Gas and Electric Company
PM ₁₀	particulate matter less than 10 microns in diameter
PM _{2.5}	particulate matter less than 2.5 microns in diameter
Porter-Cologne Act	Porter-Cologne Water Quality Control Act
PPM	parts per million
PPV	peak particle velocity
PRC	Public Resources Code

PRMMP	paleontological resources monitoring and mitigation plan
Project	Klamath River Rural Broadband Initiative Project
Project Applicant	Karuk Tribe
RCEA	Redwood Coast Energy Authority
RCRA	Resource Conservation and Recovery Act
RMS	root mean square
RNP	Redwood National Park
REDW	Redwood National Park
ROG	reactive organic gases
ROW	right-of-way
RWQCB	regional water quality control board
SB	Senate Bill
SCADA	Supervisory Control and Data Acquisition
SF-299	Application for Transportation and Utility Systems and Facilities on Federal Lands (U.S. Bureau of Land Management and U.S. Forest Service)
SHPO	State Historic Preservation Officer
SIP	state implementation plan
SLOCAPCD	San Luis Obispo County Air Pollution Control District
SMA	Streamside Management Area
SMARA	Surface Mining and Reclamation Act
SO ₂	sulfur dioxide
SONCC	Southern Oregon/Northern California Coast
SOX	oxides of sulfur
SR	State Route
SRA	State Responsibility Area
SRNF	Six Rivers National Forest
State Parks	California Department of Parks and Recreation
SVP	Society of Vertebrate Paleontology
SWPPP	storm water pollution prevention plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
TCR	The Climate Registry
TDS	total dissolved solids
THP	timber harvest plan
THPO	Tribal Historic Preservation Officer
TMDL	total maximum daily load
TPZ	Timberland Production Zone
UBC	Uniform Building Code
UCERF3	Uniform California Earthquake Rupture Forecast (Third)
UCMP	University of California Museum of Paleontology
U.S. 101	U.S. Highway 101
USACE	U.S. Army Corps of Engineers
USC	United States Code
USDA	U.S. Department of Agriculture
USDOI	U.S. Department of the Interior
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service

USGS	U.S. Geological Survey
VdB	vibration decibel(s)
VMT	vehicle miles traveled
VOC	volatile organic compound
WEAP	Worker Environmental Awareness Program
WGCEP	Working Group on California Earthquake Probabilities
Williamson Act	California Land Conservation Act of 1965
WRA	William Rich and Associates
WRCC	Western Regional Climate Center
WQO	Water Quality Order
YLUP	Yurok Land Use Plan
YTTS	Yurok Tribal Transit Services
YTVFD	Yurok Tribe Volunteer Fire Department
$\mu\text{g}/\text{m}^3$	micrograms per cubic meter

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EXECUTIVE SUMMARY

ES.1 Introduction

The Karuk Tribe (Project Applicant or Applicant), a California utility service provider (Competitive Local Exchange Carrier), is the lead applicant and fiscal agent for the Klamath River Rural Broadband Initiative (Project), which would provide high-speed internet service to numerous communities in northern Humboldt County. The Project has been granted more than \$17.4 million in California Advanced Services Fund (CASF) funding from the California Public Utilities Commission (CPUC, 2013) through CPUC Resolution T-17418 and supplemental funding approved on May 7, 2020, through CPUC Resolution T-17690 (CPUC, 2020a).

As the state agency responsible for allocation of CASF grants, CPUC is serving as the lead agency under CEQA. CPUC Resolution T-17418 and T-17690 determine that the Project is subject to review pursuant to the California Environmental Quality Act (CEQA). As required by Resolution T-17690, the Applicant submitted a PEA to the CPUC in December 2017 (Karuk Tribe, 2017), and the CPUC deemed the PEA complete on January 18, 2018. To reduce potential impacts on sensitive resources, the Applicant amended the application (as described in Chapter 2) and submitted an Amended PEA on May 15, 2020 (Karuk Tribe, 2020).

In addition to the need for review under CEQA, the Project would involve federal actions including the granting of rights-of-way on the Karuk and Yurok Indian Reservations by the U.S. Bureau of Indian Affairs (BIA), part of the U.S. Department of the Interior; therefore, review under the National Environmental Policy Act (NEPA) would also be required. BIA's granting of rights-of-way is a federal action subject to review pursuant to NEPA., and the BIA is serving as the federal lead agency under NEPA (CPUC, 2015).

In addition to its use by the BIA, this document will inform environmental review of the Project at the federal, state, and local level under NEPA and CEQA by several other agencies that have trustee responsibilities or permitting authorities, including those with jurisdiction over land over which the Project would be constructed, or that otherwise have authority with respect to a required permit or other Project approval (see Table 1-1).

ES.2 Project Description

The Project would involve installation of a middle-mile fiber optic network to provide high-speed broadband internet access to an area of approximately 80 square miles (the Project area). The

Project would extend approximately 104 miles through rural Humboldt County and would be distributed into five segments (**Figure 2-1**). The Project segments are briefly described below.

Segment 1: Orleans to Weitchpec, 15.2 miles (Figure 2-2). This segment alignment follows State Route 96. Segment 1 would include a 0.5-mile spur serving the offices of the California Department of Transportation and the Applicant, and spur extensions to the existing Orleans broadband tower and the existing Frontier Communications landline central office in Orleans.

Segment 2: Weitchpec to Wautec, 24.2 miles (Figure 2-3). This segment alignment lies entirely within the Yurok Indian Reservation. It would include a short spur to serve the Yurok Tribal Offices in Weitchpec and a 2-mile spur to serve the Yurok Tribe's Tulley Creek facility.

Segment 3: Weitchpec to Elk Camp, 21.9 miles (Figure 2-4). This segment alignment extends from the Tulley Creek facility along Bald Hills Road to Elk Camp and would include a short spur to serve the existing Yurok Wiregrass Tower and a 0.1-mile spur to the Elk Camp Fire Station.

Segment 4: Elk Camp to Orick, 11.8 miles (Figure 2-5). This segment alignment follows Bald Hills Road from Elk Camp to U.S. Highway 101 (U.S. 101) just north of Orick, then through the town of Orick to the proposed location of a new tower, the Orick Tower (**Figure 2-6**). Spurs would also connect to the existing California Department of Parks and Recreation office (shared with the National Park Service), the proposed visitor center (at the intersection of Bald Hills Road and U.S. 101), and the existing Frontier Communications office in Orick.

Segment 5: Orick to McKinleyville, 31 miles (Figures 2-7 and 2-8). This segment alignment follows U.S. 101 from the Orick Tower, through the town of Orick to the intersection of U.S. 101 with Hiltons Road, then following the PG&E transmission line through private residential and forested lands and commercial forests (including Green Diamond Resource Company [GDR] lands) from Big Lagoon to Fieldbrook, then south and west to McKinleyville. This segment includes a short spur to the Tsunami Wireless tower.

ES.3 Environmental Determination

This Initial Study Mitigated Negative Declaration and Environmental Assessment (ISMND/EA) was prepared to identify the Project's potential environmental effects, evaluate the level of significance of these effects, and identify the revisions to the Project agreed to by the Applicant that would avoid the effects or reduce them to levels below established thresholds of significance. The ISMND/EA relies on information from the PEA, the Applicant's responses to data requests by CPUC, Project site reconnaissance, and the environmental expertise of CPUC's consultant, which prepared the ISMND/EA.

The Applicant identified a number of Applicant Proposed Measures (APMs) to avoid or reduce potential impacts of the Project. All APMs are considered part of the Project for the purposes of this ISMND/EA. Upon adoption of the final MND, the APMs would become part of the Mitigation Monitoring, Reporting, and Compliance Program to ensure that CPUC, BIA, and

Responsible Agencies would monitor and enforce implementation of and compliance with the APMs along with the mitigation measures identified in the MND.

Based on the analysis documented in the ISMND/EA, in addition to implementation of APMs, mitigation measures are recommended for the following resource areas to reduce impacts of the Project to a less than significant level:

- Biological Resources
- Cultural and Tribal Cultural Resources
- Noise and Vibration

The mitigation measures supplement the APMs as indicated. The Applicant has agreed to implement all recommended mitigation measures as part of the Project. Upon adoption of the final MND, the recommended mitigation measures would become part of the Project's Mitigation Monitoring, Reporting, and Compliance Program¹. The Project's environmental impacts, APMs, and mitigation measures are provided in Chapter 6 of this ISMND/EA.

The CPUC and BIA, as CEQA and NEPA lead agencies, have prepared this joint ISMND/EA to document their analysis of potential direct, indirect, and cumulative impacts of the Project. Based on the analysis in the ISMND/EA, it has been determined, based on substantial evidence, that, through the incorporation of feasible mitigation measures agreed to by the Applicant, all potentially significant environmental impacts of the Project would be avoided or reduced to a point where clearly no significant effects would occur. The CPUC has completed the MND contained within this document based on the findings documented herein. In accordance with NEPA and based on the findings documented in the ISMND/EA, the BIA will evaluate the ISMND/EA and may choose to issue a Finding of No Significant Impact. The BIA's findings determination will be documented under separate cover.

Table ES-1 identifies the recommended APMs and mitigation measures. The draft mitigation monitoring, reporting, and compliance plan included in Chapter 6 of this ISMND/EA may be updated if needed to reflect CPUC's decision on the Project, including any revisions to the mitigation measures that must be implemented if the Project is approved.

¹ Although implementation of mitigation measures would primarily be monitored by CPUC and the tribes, BIA and other federal and state agencies would also have a responsibility to ensure measures are implemented.

Environmental Determination

On the basis of this initial evaluation:

- I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
- I find that the proposed project MAY have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
- I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Based upon an initial study, it is determined that the Project WOULD NOT HAVE a significant effect on the environment with the incorporation of the Applicant proposed measures (APMs) and mitigation measures (attached). The initial study is available for review at CPUC, 505 Van Ness Avenue, San Francisco, CA 94102, or may be accessed in electronic form through CPUC’s Project website: <https://ia.cpuc.ca.gov/environment/info/esa/klamath/index.html>.

Connie Chen

June 24, 2022

Connie Chen
Project Manager

Date

**TABLE ES-1
APPLICANT PROPOSED MEASURES AND MITIGATION MEASURES**

Resource Area	Applicant Proposed Measures (APM) and Mitigation Measures (MMs) Identified in the ISMND/EA
Aesthetics	APM VIS-1: In areas with high scenic sensitivity, such as RNP, markers indicating underground fiber optic cable will be 2 feet tall 4 x 4 inches treated wooden posts with attached dulled metal signs that are legible but not visually intrusive, or as specified by the land managing agency. In part of the RNP aboveground markers will not be used; instead, a specialized detection system will be installed in new underground splice vaults to avoid visual impacts.
	APM VIS-2: Where required by the land managing agency or landowner, safety markers indicating the presence of underground utilities can be omitted. Additional detection systems will be installed in the vaults and along the fiber optic cable lines.
	APM TRANS-3: Roads negatively affected by construction and as identified by the agencies will be returned to preconstruction condition.
Air Quality	APM AIR-1: Fugitive dust produced during construction will be controlled with watering as needed. Watering will only settle the dust and will not create runoff.
	APM AIR-2: Trucks and heavy equipment used during construction of this Project will meet California Air Resources Board standards for air pollution control for their model year
Biological Resources	APM GEN-5: Directional drilling will be used where needed and approved to avoid impacts to water, biological and cultural resources.
	APM GEN-9: The Construction Contractor will be required to develop and implement a Worker Environmental Awareness Program (WEAP).
	APM WET-1: Wetland delineations will be performed/updated prior to construction to support CWA Section 404 permitting and to minimize Project impacts. The delineation will identify both wetland and non-wetland waters of the United States that would be affected by the project. The delineation will also provide sufficient information to support California permitting and will include delineation of wetland and non-wetland waters of the State of California.
	APM WET-2: Where impacts on wetlands are not avoidable, site specific crossing plans and measures to mitigate impacts will be submitted to the appropriate regulatory agency as well as the land managing agency. The Karuk Tribe will obtain all necessary permits prior to discharging dredged or fill material to the waters of the U.S. or state.
	APM WET-3: If trench dewatering is needed, it will be completed per the Caltrans BMP NS-2 specifications and Field Guide to Construction Site Dewatering.
	APM SOIL-1: Disturbance of soils, rocks and vegetation removal will be limited to the minimum area necessary for access and construction. There will be no removal of any oak trees or rock outcrops.
	APM WEED-1: Project personnel and their contractors will be trained on noxious and invasive weed identification to facilitate avoidance of infestations where possible or identification of new infestations.
	APM WEED-2: Gravel and other materials used during fiber optic cable installation on federally managed lands will come from certified weed-free sources.
	APM WEED-3: Project vehicles will arrive at the job site clean of all soil and herbaceous material. The Construction Contractor will ensure vehicles and equipment are free of soil and debris capable of transporting noxious weed seeds, roots, or rhizomes before the vehicles and equipment access the Project.
	APM BIO-1: If construction will occur during nesting season for migratory birds (16 U.S.C sec.703-712, typically March – July) a qualified biologist will conduct a preconstruction survey for nesting birds where vegetation removal is planned (e.g. plowing, trenching, establishment of directional drilling entry and exit pits, and new pole installation). If no nests are encountered, vegetation removal may proceed. If a nest is found, that vegetation may not be removed until a biologist has determined that the nest is unoccupied, has failed, or the young have fledged.
	APM BIO-2: Seasonal restrictions for construction in old-growth forests in RNP, as specified by NPS regulations and policy, will be followed. Seasonal restrictions for construction in GDR lands will follow GDR policies and agreements.
APM BIO-3: CNDDDB data from 2021 show that there are no mapped NSO nests within 0.25-mile of the Project centerline. Available CNDDDB data from the breeding season prior to construction would be reviewed to assure that there are no new NSO nests within 0.25-mile of the Project centerline. If a new NSO nest is recorded within 0.25-mile of the Project centerline, no construction would be allowed within 0.25-mile of the nest between February 1 and August 1, or until a qualified biologist has determined that the young are fledged, the nest abandoned, or the nest failed.	
APM BIO-4: Directional drilling will be used in areas of old-growth redwood roots (Segment 4, Bald Hills Road) to avoid impacts to the trees. The Applicant will consult with NPS to determine the need for hand excavation to prevent damage to tree root systems.	

**TABLE ES-1 (CONTINUED)
 APPLICANT PROPOSED MEASURES AND MITIGATION MEASURES**

Resource Area	Applicant Proposed Measures (APM) and Mitigation Measures (MMs) Identified in the ISMND/EA
Biological Resources (continued)	<p>APM BIO-5: Where bridge hangs are planned, a preconstruction survey for listed species of bats will occur. If a maternal colony of a listed bat is found, construction will be deferred until the young have been weaned.</p> <p>MM BIO-1: Avoid Impacts to Rare Plants.</p> <p>A qualified biologist shall conduct a preconstruction survey of each Project site for special-status plant species with the potential to occur within the area of disturbance. The survey shall be floristic in nature and shall follow the procedures outlined in the CDFW publication <i>Protocols for Surveying and Evaluating Impacts to Special-status Native Plant Populations and Natural Communities</i> (CDFW, 2018). The survey shall be conducted between April and July in conjunction with the blooming seasons of those rare plants with moderate potential to occur in the Project area.</p> <p>If no special-status plants are observed during appropriately timed surveys by a qualified botanist, it shall be assumed that the construction activity will have no impact on special-status plants and no further action is required.</p> <p>If special-status plants are identified within the Project area, the individuals or populations shall be mapped and quantified and reported to the CNDDB, and the project manager shall be notified so that potential impacts on these known occurrences shall be avoided, when feasible. Coordination with CDFW and/or USFWS staff shall be conducted to establish appropriate avoidance and minimization measures if the species is federally or state listed. Avoidance and minimization measures may include:</p> <ol style="list-style-type: none"> 1. No-disturbance buffers. 2. Work windows for low impact activities that are compatible with the dormant phase of a special-status plant life cycle but that may kill living plants or severely alter their ability to reproduce. 3. Silt fencing or construction fencing to prevent vehicles, equipment, and personnel from accessing the occupied habitat. 4. Erosion control BMPs such as straw wattles made of rice straw, erosion control blankets, or hydroseeding with a native plant seed mix to prevent sedimentation from upslope construction activities. 5. In consultation with, and as authorized by, CDFW or USFWS, a qualified botanist may collect and spread seeds or relocate plants to appropriate locations. <p>MM BIO-2: Measures to Avoid Impacts to Special-status Terrestrial Species: To avoid and minimize direct and indirect impacts on special-status terrestrial wildlife species, the following protection measures shall be implemented:</p> <ol style="list-style-type: none"> 1. The name(s) and credentials of the qualified biologist(s) to act as construction monitors shall be submitted to CDFW/CPUC for approval at least 15 days before construction work begins. 2. Before the start of work, an approved biologist shall survey the active construction footprint for special-status mammal, amphibian and reptile species with the potential to be present, such as Humboldt marten, northern red-legged frog, and western pond turtle. 3. At the beginning of each workday that includes initial ground disturbance, including grading, excavation, and vegetation removal activities, the qualified biologist shall conduct on-site monitoring for the presence of these species in the area where ground disturbance or vegetation removal is planned. 4. All excavated or deep-walled holes or trenches greater than 2 feet deep shall be covered at the end of each workday using plywood, steel plates, or similar materials, or escape ramps shall be constructed of earth fill or wooden planks to allow animals to exit. Before such holes are filled, they shall be thoroughly inspected for trapped animals. 5. If a special-status species is present within the construction area, work shall cease in the vicinity of the animal, and the animal shall be allowed to relocate of its own volition unless relocation is permitted by state and/or federal regulatory agencies. 6. The contractor shall provide closed garbage containers for the disposal of all trash items (e.g., wrappers, cans, bottles, food scraps). Before work sites are closed each day, the work sites shall be cleaned of litter, and the litter shall be placed in wildlife-proof garbage receptacles. Construction personnel shall not feed or otherwise attract any wildlife. No pets, excluding service animals, shall be allowed in construction areas. 7. For Humboldt marten, a seasonal operating limitation shall be applied to identified marten core habitat which intersects the alignment in Segments 4 and 5. In these areas, no ground-disturbing construction activities would be permitted during the breeding season of Humboldt marten (March 1 to July 31).

TABLE ES-1 (CONTINUED)
APPLICANT PROPOSED MEASURES AND MITIGATION MEASURES

Resource Area	Applicant Proposed Measures (APM) and Mitigation Measures (MMs) Identified in the ISMND/EA
Biological Resources (continued)	<p>MM BIO-3: Avoid Impacts to Special-status Bats: Before any construction, a qualified bat biologist shall conduct a preconstruction survey for roosting bats in the trees to be pruned and structures to be demolished. If no roosting bats are found, no further action is required.</p> <p>If an active bat roost is found, the following measures shall be implemented to avoid impacts on roosting bats.</p> <ol style="list-style-type: none"> 1. If active maternity roosts are found in trees that shall be pruned or structures to be demolished as part of construction, tree trimming or demolition of the structure shall begin before maternity colonies form (generally before March 1) or after the young are flying (generally by July 31). Active maternal roosts shall not be disturbed. 2. If a non-maternal roost of bats is found in a tree or structure to be pruned or demolished as part of construction, the individuals shall be safely evicted, under the direction of a qualified bat biologist and with approval from CDFW. Removal of the habitat shall occur no sooner than two nights after the initial minor site modification (to alter airflow), under the guidance of the qualified bat biologist. The modifications shall alter the bat habitat, causing bats to seek shelter elsewhere after they emerge for the night. On the following day, the habitat in the tree or structure may be removed, in the presence of the bat biologist.
	<p>MM BIO-4: Avoid Impacts to Listed Birds</p> <ol style="list-style-type: none"> 1. To prevent noise and visual disturbance to nesting marbled murrelets and northern spotted owls, the Project would adhere to USFWS guidance on estimating effects of auditory and visual disturbance, and would have a seasonal operating limitation on all ground-disturbing construction activities along Bald Hills Road within the RNP in old-growth redwoods. No ground-disturbing construction activities would be permitted from March 1 through September 15, as shown in Figure 2. 2. Using the technical assistance response from the USFWS (2022), the proponent would conduct NSO protocol surveys the nesting season prior to construction where prior actionable observations² are within or very close to the ¼-mile noise buffer along the project alignment in Segment 1. In areas where activity centers have substantial and recent survey data showing abandonment by NSO, or are more than ¼ mile from the project alignment and had no actionable observations within the ¼-mile buffer during any survey, the proponent would not conduct initial surveys. Where the proponent conducts protocol surveys, any actionable observation within ¼-mile of the construction alignment shall be identified. A no-construction buffer would be established along the project alignment of ¼-mile on either side of the identified actionable observation from February 1 to July 31 that would be applicable for the year the survey was conducted and the following year until additional surveys were conducted. If protocol-level surveys conducted the following nesting season indicate no actionable observations within ¼ mile, construction activity may proceed during the season of the survey and the following nesting season. Limited operating seasons would remain in place if actionable observations are recorded or if subsequent surveys are not conducted. 3. Additional limited operating season areas may be identified for NSO for historically occupied activity centers where the applicant does not conduct initial protocol surveys. Those limited operating seasons, from February 1 to July 31, would be defined along the project alignment ¼ mile on either side of historic actionable observations. In those areas, the proponent would accept the limited operating season for the duration of construction or conduct protocol surveys to determine presence of NSO. If surveys are subsequently conducted and no NSO are present, the limiting operating season would not apply in the following nesting season. 4. Where there are multiple limited operating seasons imposed in an area, the limitation would apply from the first day of the earliest restriction to the last day of the latest restriction for each of the two species.
Cultural Resources	<p>APM CR-1: An archeologist meeting the Secretary of the Interior's Professional Qualifications Standards for Archaeology with expertise in California archaeology (qualified archaeologist) will perform or direct all cultural resources work with trained assistants.</p>

² An “actionable observation” is an observation of a pair (including with nesting behavior but no nest found) or a nest (including a nest with young), USFWS (2022)

**TABLE ES-1 (CONTINUED)
APPLICANT PROPOSED MEASURES AND MITIGATION MEASURES**

Resource Area	Applicant Proposed Measures (APM) and Mitigation Measures (MMs) Identified in the ISMND/EA
Cultural Resources (continued)	<p>APM CR-2: Prior to any ground-disturbing activities, a qualified archaeologist, in consultation with the Yurok Tribe, Karuk Tribe, Wiyot Tribe, and the Applicant, will develop a Cultural Resources Management Plan (CRMP). The CRMP will include provisions for establishing Archaeologically Sensitive Areas (ASAs), specific locations where directional drilling is required in the vicinity of known archaeological sites, and an Archaeological Monitoring Plan (AMP) that provides monitoring protocols for the Project. The CRMP will also establish management guidelines for protecting archaeological sites from future impacts. The CRMP will include the following specific components:</p> <ol style="list-style-type: none"> 1. Maps of known archaeological sites with a reference system so that clear boundaries are established in relation to the Project. 2. Maps with a buffer area of 100 feet around the boundaries of known sites establishing ASAs. 3. Provisions for fencing or other protective measures of ASAs. 4. Provisions for the removal of identifying markers for ASAs after construction in the area is complete. 5. Maps of specific locations where directional drilling will be required in the vicinity of known archaeological sites and provision for installation methods, including appropriate depth of directional drilling. 6. The outline of a worker cultural resources awareness training program that will be provided for all personnel involved in ground-disturbing activities. The program will detail the recognition and importance of archaeological resources, and procedures to follow should archaeological resources be encountered during construction. 7. An AMP that includes provisions for monitoring during ground-disturbing activities, including the locations and duration of monitoring, the anticipated roles of monitors, and the reporting requirements. 8. An Inadvertent Discovery Plan that includes actions to follow should an archaeological resource be encountered, including stopping work within 100 feet of the find, notifying the appropriate land management agency, and continuing the stop-work order until it can be evaluated by a qualified archaeologist and a Native American representative. The Inadvertent Discovery Plan will also include a research design and treatment plan to be instituted if a resource cannot be avoided. The research design and treatment plan will be completed in consultation with Native American representatives. 9. Provisions that the California Public Utilities Commission (CPUC) and BIA, together with the appropriate land managing agency if on federal land, will determine whether avoidance is feasible in light of factors such as the nature of the inadvertent discovery, Project design, costs, and other considerations. If avoidance is not feasible, other appropriate measures (e.g., data recovery as agreed upon between CPUC, BIA, the appropriate land managing agency if on federal land, the archaeological consultant, and Native American representatives) will be instituted.
	<p>APM CR-3: If human remains are discovered, construction will be halted, and the coroner will be notified. If it is determined that the remains meet NAGPRA criteria, measures specified in NAGPRA regulations will be followed on federal lands.</p>
	<p>APM CR-4: The Karuk Tribe will supply Native American Monitors in the Karuk Ancestral Territory, the Yurok Tribe will supply Native American Monitors in the Yurok Ancestral Territory, and the Wiyot Tribe will supply Native American Monitors in the Wiyot Ancestral Territory. Where ancestral territories are mapped as overlapping, monitors from both tribes will work in tandem.</p>
	<p>APM CR-5: Where depth of archaeological resources in highly sensitive areas can be known or assumed, directional drilling may be required by land managing agencies to avoid cultural resources. Directional drilling depths should be at least two feet below known maximum depth of cultural resources. If fractured bedrock must be drilled, preventing the inadvertent release of drilling fluids (inert clays and water) cannot be guaranteed.</p>
	<p>MM CUL-1: Segment 1 North</p> <p>The Karuk Resources Advisory Board concurred that ground disturbance in areas of anchor replacement is a minor action, however, within the three identified archaeological sites, a monitor should be used; outside of identified cultural sites, pre-inspection and post-inspection should be sufficient.</p> <p>A pole replacement was acknowledged to be a more ground-disturbing activity and a monitor should be present for such an operation within the APE. If a pole needs to be replaced within identified cultural site, then all attempts should be made to re-use the existing hole for placement of a new utility pole. Tribal monitoring should be coordinated through the Karuk THPO.</p>

TABLE ES-1 (CONTINUED)
APPLICANT PROPOSED MEASURES AND MITIGATION MEASURES

Resource Area	Applicant Proposed Measures (APM) and Mitigation Measures (MMs) Identified in the ISMND/EA
Cultural Resources (continued)	<p>MM CUL-2 Segment 1 North Ground disturbing activities should not be done during Karuk ceremonial times. Caltrans issues encroachment permits for work on the highway, and those permits will exclude ceremony dates.</p>
	<p>MM CUL-3 Segment 2 South It is recommended that a tribal monitor be afforded an opportunity to observe all ground disturbing activities within Yurok territory. For the purposes of this Project, this area extends from MP 26.5 in Segment 1 downriver throughout the Klamath River corridor, over Bald Hills Road, south on U.S. 101 and through industrial timberland, to the crossing of Little River. The Project route passes through and near several ethnographic villages, archaeological sites, as well as the Bald Hills Archaeological District, Lyons Ranches Historic District, and the Bald Hills Ethnographic District and the Yurok Tribe requests monitoring regardless of resource location, significance evaluations, or NHPA Section 106 findings. Tribal monitoring should be coordinated through the Yurok THPO. Redwood National Park also requests that archaeological monitoring occur within all three Districts: Bald Hills Archaeological District, Lyons Ranches Historic District, and the Bald Hills Ethnographic District and that a discovery plan of action be in place, specifically to address trenching beneath paved surfaces, where field survey was unable to be completed, and to address secondary deposits that may be encountered within the inboard ditch.</p>
	<p>MM CUL-4: CA-HUM-443 This reach along Bald Hills Road, within the archaeology site appears to be cut below the historical ground surface and trenching of the inboard ditch or within the road bed would immediately enter deeper strata and the Franciscan formation bedrock. Trenching within the roadbed will be conducted at locations where the roadside ditch is either filled with vegetation or exhibits shallow topography and surface bedrock exposure is not visible. These installation methods will ensure adverse impacts to the archaeological site are avoided. The presence of archaeological monitors during trenching into the paved road surface will also allow for a phased approach of identification efforts at these locations.</p>
	<p>MM CUL-5: CA-HUM-446/H The Project shall utilize the inboard ditch or trenching of the road bed and would immediately enter the Franciscan formation bedrock, thereby avoiding the archaeological site.</p>
	<p>MM CUL-6: CA-HUM-448 The Project shall utilize the ditch along the eastern edge of Bald Hills Road, where it is deeply cut below the ridgeline and the archaeological site, thereby avoiding the archaeological site.</p>
	<p>MM CUL-7: CA-HUM-452 The Project shall utilize the inboard ditch or trenching of the road bed and would immediately enter the Franciscan formation bedrock, thereby avoiding the archaeological site.</p>
	<p>MM CUL-8: CA-HUM-625 The Project shall utilize boring through this area to ensure that installation does not impact surface strata, thereby avoiding the archaeological site.</p>
	<p>MM CUL-9: Lyons Ranches Historic District The Project through the District will avoid the use of buried fiber line placards or other above ground marker. The historical setting and integrity of the District shall be maintained and no above ground visual intrusions should be introduced as a way to mark the route of the underground fiber optic utility. Junction boxes or other infrastructure should also be at or below grade, and not made visible to park users.</p>
	<p>MM CUL-10: P-12-002326 Trenching at this location shall only be done on the east side of the road, thereby avoiding the archaeological site.</p>
	<p>MM CUL-11: CA-HUM-668 (P-12-000659) The Project shall utilize trenching beneath the site where bedrock is visible and boring underneath the ditch where depth of bedrock is unclear, thereby avoiding the archaeological site.</p>

TABLE ES-1 (CONTINUED)
APPLICANT PROPOSED MEASURES AND MITIGATION MEASURES

Resource Area	Applicant Proposed Measures (APM) and Mitigation Measures (MMs) Identified in the ISMND/EA
Cultural Resources (continued)	MM CUL-12: CA-HUM-669 (P-12-000660) Due to the lack of visible Franciscan outcrops and heavy vegetation, the Project will utilize directional drilling at a depth of at least 5 feet below the surface within the site boundary.
	MM CUL-13: P-12-001877 and REDW-2009-01 The Project shall utilize trenching of the road bed, thereby avoiding the archaeological sites.
	MM CUL-14: Staging Area #403 Staging area #403 shall not be developed on undisturbed grassland. Nearby roadside pullouts or other previously disturbed areas would be used as alternatives.
	MM CUL-15: CRF-BHR-09 The site should be flagged to ensure that Project equipment operates only on the immediate edge of the road.
	MM CUL-16: Archaeological Field Markers All archaeological site boundaries shall be marked in the field (i.e. flagging) prior to Project implementation and removed after construction is completed.
Geology	APM GEN-1: Environmental Compliance Monitors hired by the Tribe will monitor construction activities and will report to the Tribe and to the agencies regarding construction compliance with permit terms and conditions. Monitoring activities would be structured in accordance with an Environmental Compliance Management Plan, developed by the Tribe and approved by the lead state and federal agencies prior to construction
	APM GEN-3: RNP policies and regulations will apply within the RNP. Ground-disturbing activities will comply with listed seasonal constraints and other requirements.
	APM GEN-4: As part of the Karuk Tribe's environmental compliance commitment, the Construction Contractor(s) will be contractually bound to comply with all laws, regulations, and permit requirements, including the mitigation measures and other specific stipulations and methods that are developed as part of the NEPA/CEQA process.
	APM GEN-5: Directional drilling will be used where needed and approved to avoid impacts to water, biological and cultural resources.
	APM GEN-7: A list and map of available and analyzed laydown and staging areas was provided in this document. If the construction contractor wishes to utilize other laydown areas or staging areas, it is up to the contractor to show to the satisfaction of agencies with jurisdiction prior to their use during construction that those areas provide similar or less disturbance than those shown in this document.
	APM GEN-9: The Construction Contractor will be required to develop and implement a Worker Environmental Awareness Program (WEAP).
	APM SOIL-1: Disturbance of soils and rocks and vegetation removal will be limited to the minimum area necessary for access and construction.
	APM WET-3: If trench dewatering is needed, it will be completed per the Caltrans BMP NS-2 specifications and Field Guide to Construction Site Dewatering.
	APM WATER-1: The construction contractor will be required to develop and file a SWPPP and to comply with the permit conditions as issued by the State Water Resources Control Board, Region 1.
	APM OM-2: The Tribe will provide crews and contractors with maps showing environmentally sensitive areas; these maps will include work zones as well as ROW areas where ground disturbance will be avoided.

TABLE ES-1 (CONTINUED)
APPLICANT PROPOSED MEASURES AND MITIGATION MEASURES

Resource Area	Applicant Proposed Measures (APM) and Mitigation Measures (MMs) Identified in the ISMND/EA
Hazards and Hazardous Materials	<p>APM HAZ-1: The Applicant shall prepare a Hazardous Materials Management Plan (HMMP) for approval by the CPUC. The HMMP shall be prepared and submitted at least 30 days prior to the start of construction. The HMMP shall include, but not be limited to, the following requirements:</p> <ol style="list-style-type: none"> 1. The Applicant's Construction Contractor shall prepare a Hazardous Substance Control and Emergency Response Plan (Plan) and implement it during construction to ensure compliance with all applicable federal, state, and local laws and guidelines regarding the handling of hazardous materials. If the Project would result in the storage or handling of a Threshold Quantity or greater of a hazardous substance as defined by the California Hazardous Materials Release Response Plan and Inventory Law, the Plan shall include preparation and implementation of a Hazardous Materials Business Plan that describes the hazardous materials usage, storage, and disposal to the appropriate Certified Unified Program Agency. The Plan shall prescribe hazardous material handling procedures to reduce the potential for a spill during construction, or exposure of the workers or public to hazardous materials. The Plan shall also include appropriate response actions in the event that hazardous materials are released or encountered during excavation activities. The Plan shall be submitted to the CPUC for review and approval prior to the commencement of construction activities. The Plan shall require that the Applicant and/or its contractors shall implement construction best management practices including but not limited to the following: <ol style="list-style-type: none"> a. Follow manufacturer's recommendations on use, storage, and disposal of chemical products used in construction. b. Avoid overtopping construction equipment fuel gas tanks. c. Use tarps and oil-absorbent pads under vehicles when refueling to contain and capture any spilled fuel. d. During routine maintenance of construction equipment, properly contain and remove grease and oils. e. Properly dispose of discarded containers of fuels and other chemicals.
	<p>APM FIRE-1: Before the start of construction, the Applicant's Construction Contractor will prepare a project-specific Construction Fire Prevention Plan (CFPP) to ensure the health and safety of construction workers and the public from fire-related hazards. Local fire departments shall be consulted during plan preparation and the CFPP will include fire safety measures as recommended by these departments. The CFPP shall list fire prevention and extinguishment procedures and specific emergency response and evacuation measures that would be followed during emergency situations. The CFPP also would provide smoking and fire-related rules, storage, and parking areas, require usage of spark arrestors on construction equipment, and fire-suppression tools and equipment. The CFPP shall include, but not be limited to, the following:</p> <ol style="list-style-type: none"> 1. Water tanks, water trucks, or portable water backpacks (where space or access for a water truck or water tank is limited) will be sited/available in the Project area for fire protection where fire hydrants are not available. 2. All construction vehicles shall have fire suppression equipment. 3. All construction workers shall receive training on the proper use of fire-fighting equipment and procedures to be followed in the event of a fire. 4. As construction may occur simultaneously at several locations, each construction site shall be equipped with fire extinguishers and fire-fighting equipment sufficient to extinguish small fires. 5. Construction personnel shall be required to park vehicles away from dry vegetation. 6. Prior to construction, contact and coordinate with the appropriate fire departments to determine the appropriate amounts of fire equipment to be carried on the vehicles and appropriate locations for the water tanks, water trucks, and/or water backpacks. The Applicant shall submit verification of its consultation with the appropriate fire departments to the CPUC. 7. The CFPP shall be submitted to CPUC prior to commencement of construction activities and shall be distributed to all construction crew members prior to construction of the Project. 8. Cease work during Red Flag Warning events in areas where vegetation would be susceptible to accidental ignition by Project activities (such as welding or use of equipment that could create a spark). During Red Flag Warning events all non-emergency construction and maintenance activities will cease in affected areas.

TABLE ES-1 (CONTINUED)
APPLICANT PROPOSED MEASURES AND MITIGATION MEASURES

Resource Area	Applicant Proposed Measures (APM) and Mitigation Measures (MMs) Identified in the ISMND/EA
Hazards and Hazardous Materials (continued)	APM GEN-8: The Construction Contractor will be required to develop and implement a Health and Safety Plan.
	APM GEN-10: At least one portable toilet and hand-washing station will be provided per crew.
	APM TRANS-1: Traffic control measures such as traffic control personnel, warning signs, lights, and barriers will be used during construction as specified in the encroachment permits from road managers to ensure safety and to minimize traffic congestion.
Air Quality	APM AIR-1: Fugitive dust produced during construction will be controlled with watering as needed. Watering will only settle dust and will not create runoff.
	APM AIR-2: Trucks and heavy equipment used during construction of this Project will meet California Air Resources Board standards for air pollution control for their model year.
Hydrology and Water Quality	APM AIR-1: Fugitive dust produced during construction will be controlled with watering as needed. Watering will only settle dust and will not create runoff.
	APM GEN-5: Directional drilling will be used where needed and approved to avoid impacts to water, biological, and cultural resources.
	APM REC-1: Final Cleanup: Final cleanup will ensure that all construction areas are free of any construction debris including, but not limited to: assembly scrap metals, oil or other petroleum-based liquids, construction wood debris, and worker-generated litter. Permanent erosion control devices will be left in place.
	APM SOIL-1: Disturbance of soils and vegetation removal will be limited to the minimum area necessary for access and construction.
	APM WATER-1: The construction contractor will be required to develop and file a SWPPP and to comply with the permit conditions as issued by the State Water Resources Control Board, Region 1.
	APM WATER-2: Construction industry standard practices and BMPs will be used for spill prevention and containment.
	APM WET-1: Wetland delineations will be performed prior to construction to support CWA Section 404 permitting and to minimize Project impacts. The delineation will identify both wetland and non-wetland waters of the United States that would be affected by the Project. The delineation will also provide sufficient information to support California permitting and will include delineation of wetland and non-wetland waters of the State of California.
	APM WET-2: Where impacts on wetlands are not avoidable, site-specific crossing plans and measures to mitigate impacts will be submitted to the appropriate regulatory agency, as well as the land managing agency. The Karuk Tribe will obtain all necessary permits prior to discharging dredged or fill material to the waters of the United States or state.
APM WET-3: If trench dewatering is needed, it will be completed per the CalTrans BMP NS-2 specifications and Field Guide to Construction Site Dewatering.	

TABLE ES-1 (CONTINUED)
APPLICANT PROPOSED MEASURES AND MITIGATION MEASURES

Resource Area	Applicant Proposed Measures (APM) and Mitigation Measures (MMs) Identified in the ISMND/EA
Land Use	APM GEN-1: Environmental Compliance Monitors hired by the Tribe will monitor construction activities and will report to the Tribe and to the agencies regarding construction compliance with permit terms and conditions. Monitoring activities will be structured in accordance with an Environmental Compliance Management Plan, developed by the Tribe and approved by the lead state and federal agencies prior to construction.
	APM GEN-2: Forest Plan Standards and Guidelines (as amended) will apply on NFS lands. Ground-disturbing activities will comply with all Agency-wide, regional, and state BMPs.
	APM GEN-3: RNP policies and regulations will apply within the RNP. Ground-disturbing activities will comply with listed seasonal constraints and other requirements.
	APM GEN-4: As part of the Karuk Tribe's environmental compliance commitment, the Construction Contractor(s) will be contractually bound to comply with all laws, regulations, and permit requirements, including the mitigation measures and other specific stipulations and methods that are developed as part of the NEPA/CEQA process.
	APM SOIL-1: Disturbance of soils and rock and vegetation removal will be limited to the minimum area necessary for access and construction.
	APM OM-1: Before beginning an operations or maintenance project, KRRBI contractors or their subcontractors will clean all equipment that will operate off-road or disturb the ground. The entire vehicle or equipment will be cleaned at an off-site location.
	APM OM-2: The Tribe will provide crews and contractors with maps showing environmentally sensitive areas; these maps will include work zones as well as ROW areas where ground disturbance will be avoided.
Noise and Vibration	<p>MM NOISE-1: To reduce daytime noise impacts due to construction of Segment 5, the Project proponent(s) shall be required to implement the following measures:</p> <ul style="list-style-type: none"> • Equipment and trucks used for project construction shall use the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures, and acoustically-attenuating shields or shrouds, wherever feasible). • Concrete saws shall be operated at least 30 feet from the nearest occupied residence or shall be equipped with a noise attenuating shield or shroud that blocks the line of sight between the saw and the nearest residences.
Public Services	APM FIRE-1: See Hazards and Hazardous Materials for text of measure
	APM TRANS-1: Traffic control measures such as traffic control personnel, warning signs, lights, and barriers will be used during construction as specified in the encroachment permits from road managers to ensure safety and to minimize traffic congestion.
	APM TRANS-2: Emergency vehicle access to private property will be maintained during construction.
Recreation	APM REC-1: Final Cleanup: Final cleanup will ensure that all construction areas are free of any construction debris including, but not limited to: assembly scrap metals, oil or other petroleum-based liquids, construction wood debris, and worker-generated litter. Permanent erosion control devices will be left in place.
Transportation	APM GEN-6: Workers will be encouraged to carpool from housing to the work site each day.
	APM TRANS-1: Traffic control measures such as traffic control personnel, warning signs, lights, and barriers will be used during construction as specified in the encroachment permits from road managers to ensure safety and to minimize traffic congestion.
	APM TRANS-2: Emergency vehicle access to private property will be maintained during construction.
	APM TRANS-3: Roads negatively affected by construction and as identified by the agencies will be returned to preconstruction condition.

TABLE ES-1 (CONTINUED)
APPLICANT PROPOSED MEASURES AND MITIGATION MEASURES

Resource Area	Applicant Proposed Measures (APM) and Mitigation Measures (MMs) Identified in the ISMND/EA
Utilities and Service Systems	APM REC-1: Final Cleanup: Final Cleanup will ensure that all construction areas are free of any construction debris including, but not limited to: assembly scrap metals, oil or other petroleum based liquids, construction wood debris, and worker generated litter. Permanent erosion control devices will be left in place.
	APM SOIL-1: Disturbance of soils and vegetation removal will be limited to the minimum area necessary for access and construction.
	APM WATER-2: Construction industry standard practices and BMPs will be used for spill prevention and containment.
	APM WET-2: Where impacts on wetlands are not avoidable, site specific crossing plans and measures to mitigate impacts will be submitted to the appropriate regulatory agency, as well as the land managing agency. The Karuk Tribe will obtain all necessary permits prior to discharging dredged or fill material to the waters of the U.S. and state.
	APM WET-3: If trench dewatering is needed, it will be completed per the Caltrans BMP NS-2 specifications and Field Guide to Construction Site Dewatering.
Wildfire	APM FIRE-1: See Hazards and Hazardous Materials for text of measure.
	APM TRANS-1: Traffic control measures such as traffic control personnel, warning signs, lights, and barriers will be used during construction as specified in the encroachment permits from road managers to ensure safety and to minimize traffic congestion.
	APM TRANS-2: Emergency vehicle access to private property will be maintained during construction.

CHAPTER 1

Introduction

1.1 Purpose of This Document

The Karuk Tribe (Project Applicant or Applicant), a California utility service provider (Competitive Local Exchange Carrier), is the lead applicant and fiscal agent for the Klamath River Rural Broadband Initiative (Project or Proposed Action¹), which would provide high-speed internet service to numerous communities in northern Humboldt County. The Project has been granted more than \$17.4 million in California Advanced Services Fund (CASF) from the California Public Utilities Commission (CPUC, 2013) through CPUC Resolution T-17418 and through supplemental funding approved on May 7, 2020, through CPUC Resolution T-17690 (CPUC, 2020a). The CPUC authorizes grants from the CASF to promote deployment of advanced communications services to unserved² and underserved areas in California (CPUC, 2020b).

CPUC Resolutions T-17418 found that the Project is subject to review pursuant to the California Environmental Quality Act (CEQA). As required by Resolution T-17410, the Applicant submitted a Proponent’s Environmental Assessment (PEA) to the CPUC in December 2017 (Karuk Tribe, 2017), and the CPUC deemed the PEA complete on January 18, 2018. To reduce potential impacts on sensitive resources, the Applicant amended the application and submitted an Amended PEA on May 15, 2020 (Karuk Tribe, 2020). As the state agency responsible for allocation of CASF grants, CPUC is serving as the lead agency under CEQA.

In addition to the need for review under CEQA, as the Project would involve the granting of rights-of-way (ROW) on the Karuk and Yurok Indian lands by the U.S. Bureau of Indian Affairs (BIA), part of the U.S. Department of the Interior, review under the National Environmental Policy Act (NEPA) would also be required. BIA’s granting of rights-of-way is a federal action subject to review pursuant to NEPA, and the BIA is serving as the federal lead agency under NEPA (CPUC, 2015).

The CPUC and BIA, as CEQA and NEPA lead agencies, have prepared this joint Initial Study (IS), Notice of Intent to Adopt a Mitigated Negative Declaration (MND), and Environmental Assessment (EA) (referred to in this document as the “ISMND/EA”) to document their analysis of potential direct, indirect, and cumulative impacts of the Project. The CPUC has completed the MND contained within this document based on the findings documented herein. Based on the

¹ The terms *Project and Proposed Action* are used interchangeably throughout this document with respect to both the CEQA and NEPA analyses.

² The terms *underserved, unserved, and partially served* are used here as defined in the California Broadband Map (CPUC, 2020b).

findings documented in the ISMND/EA, the BIA may choose to issue a Finding of No Significant Impact. The BIA's findings determination will be documented under separate cover.

This document has been prepared in accordance with the requirements set out in NEPA (42 U.S. Code [USC] 4321 et seq.), the Council on Environmental Quality (CEQ) Guidelines for Implementing NEPA, and the BIA NEPA handbook (59 IAM 3-H). In addition to its use by the BIA, this document will inform environmental review of the Project at the federal, state and local level under NEPA and CEQA by several other agencies that have trustee responsibilities or permitting authorities, including those with jurisdiction over land over which the Project would be constructed, or that otherwise have authority with respect to a required permit or other Project approval (see **Table 1-1**).

Agencies invited to participate in the NEPA process as cooperating agencies³ under NEPA or responsible⁴/trustee⁵ agencies under CEQA include the National Park Service (NPS), U.S. Forest Service, U.S. Bureau of Land Management, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, California Department of Parks and Recreation, California State Lands Commission (CSLC), California Department of Forestry and Fire Protection, California Department of Transportation, California Department of Fish and Wildlife (CDFW), and Humboldt County.

1.2 Organization of This Document

This ISMND/EA is organized as follows:

The **Executive Summary** provides a summary description of the Project and the No-Project Alternative, summarizes the NEPA alternatives analysis process, and provides a summary table of the impacts and mitigation measures of the Project.

Chapter 1, *Introduction*, presents an overview of the Project and objectives, briefly describes the Project, and outlines public agencies' use of the document.

Chapter 2, *Project Description*, describes the Project in detail.

Chapter 3, *Alternatives*, explains the consideration of alternatives and describes the no action alternative.

Chapter 4, *Environmental Analysis*, provides a comprehensive analysis and assessment of impacts and mitigation measures for the Project and the No-Project Alternative. This chapter is divided into sections for each environmental issue area (e.g., Air Quality, Biological

³ The CEQ NEPA Regulations, 40 Code of Federal Regulations (CFR) 1501.6 and 40 CFR 1508.5, address *cooperating agencies*, which are federal agencies other than a lead agency which have jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal or reasonable alternative. These regulations implement the NEPA mandate that federal agencies prepare NEPA analyses and documentation "in cooperation with State and local governments" and other agencies with jurisdiction by law or special expertise (42 USC 4331(a) and 42 USC 4332[2]).

⁴ A *responsible agency* under CEQA is a public agency with some discretionary authority over a project or a portion of it, but which has not been designated the lead agency. (State CEQA Guidelines Section 15381.)

⁵ A *trustee agency* is a state agency having jurisdiction by law over natural resources that are held in trust for the people of California, and which may be affected by a project (State CEQA Guidelines Section 15386). A trustee agency may also be a responsible agency if it has discretionary authority over a project. With respect to agencies with jurisdiction over the Project, both CDFW and the CSLC are trustee agencies.

Resources), each containing the environmental setting, and a discussion of impacts and mitigation measures proposed for the Project.

Chapter 5, *Report Preparers*, identifies the primary authors of this Draft ISMND/EA

Chapter 6, *Mitigation Monitoring, Reporting, and Compliance Plan*, discusses the CPUC's mitigation monitoring, reporting, and compliance program requirements for the Project as approved by the CPUC.

Appendices provide additional supporting information and technical studies, as follows:

Appendix A: Alternatives Analysis

Appendix B: Air Quality and Greenhouse Gas Emissions

Appendix C: Special Status Species

Appendix D: References

Appendix E: Figures

Appendix F: Regulatory Framework

Appendix G: Mailing List

1.3 Project Objectives and Purpose and Need

1.3.1 Project Objectives

The Project would involve the installation of about 104 miles of cable in northern Humboldt County in an area of approximately 80 square miles (the Project Area) that includes several small towns: Orleans, Weitchpec, Wautec, Ka'Pel, Tulley Creek, Orick, and McKinleyville. The purpose of the Project is to provide high-speed broadband service and connectivity to residents, businesses, and civic institutions that are currently limited in communications for vital services. The Project was designed to offer services to anchor institutions⁶ and is required to do so under the terms of the CASF grant (Karuk Tribe, 2020). As defined by CPUC Decision D.12-02-015, the need for the Project is predicated on the fact that these areas are underserved (CPUC, 2020b). The purpose and need for the Project align with Senate Bill 1193 (approved in 2008 and codified in Public Utilities Code Section 281) to approve funding for infrastructure projects that will provide broadband access to 98 percent or more of California households.

The objectives for the Project for the purposes of NEPA and CEQA are as follows:

- To provide high-speed broadband internet service to residents and businesses located in the Project area and improve communication within the communities.
- To provide connectivity to numerous anchor institutions in the Project area. The Project would serve 26 anchor institutions, as described in Chapter 2.

⁶ An *anchor institution* is a basic community facility that provides important public safety, education, or governmental services. The fiber optic route is geographically determined by the locations of the anchor institutions that the project, if constructed, would serve.

1.3.2 Project Purpose and Need

The communities, residents, and anchor institutions in the Project area currently have inadequate internet access. The Applicant estimates that around 75 percent of the populations of Orleans, Weitchpec, Ka'Pel, and Wautec were underserved for internet access (Karuk Tribe, 2020). Orick is listed on the California broadband map as partially served, where an unknown percentage of households has access to full broadband service according to the California standard (CPUC, 2018). Satellite internet is currently the most common form of access in the Project area. There are several local providers (see Section 2.4 for details) but generally service is very limited, unreliable and is not available to the majority of the Project area.

BIA

The Project requires use of ROW on Karuk and Yurok Indian land meaning that the Applicant must submit a ROW application to the BIA (the Proposed Action). The BIA is the federal lead agency that is charged with NEPA review of ROW grants. As federal lead agency, BIA's purpose and need with respect to the Proposed Action is consideration of granting ROW easements upon lands held in federal trust, to allow the construction and operation of a broadband network to provide high-speed internet access throughout the ROW area.

Cooperating Agencies

As summarized in Table 1.5, in addition to consideration of the Proposed Action by BIA, several other federal agencies would need to approve various aspects of the Project and/or provide permits before the Project can be constructed. For the purposes of CEQA and NEPA review for each of these agencies, the purpose and need is to review direct, indirect, and cumulative effects of the Proposed Action and consider granting respective permits and approvals.

Applicant

As presented in the PEA (Karuk Tribe, 2020), the purpose of the KRRBI Project is to provide high-speed broadband Internet service to people living in the ancestral territories of the Karuk and Yurok Tribes (Tribes), including tribal and non-tribal community members, who are presently unserved or underserved by current service providers. The Project is needed in order to serve a remote and rural area with very limited and inadequate broadband service. The Project would contribute to better education, health care, public safety, and business opportunities and contribute to economic, social, and community health.

1.4 Agency and Public Outreach

Agency outreach for the Project began in 2015. In early 2015, the CPUC and BIA attended an initial meeting for the Project at which the Applicant introduced the Project to both agencies and discussions were held regarding the preferred NEPA/CEQA approach (CPUC, 2015). The CPUC and BIA then participated in a two-day kickoff meeting in August 2015. This meeting was organized and facilitated by the Applicant and attended by the Applicant and the Yurok Tribes and virtually all of the agencies participating in the Project (Karuk Tribe, 2015). At this meeting,

CPUC and BIA representatives shared information about the environmental review process and held informal technical discussions with participating agencies regarding potential biological and cultural resource concerns related to the Project. All attendees also participated in a site visit to review the proposed construction location and existing site conditions throughout the Project alignment.

Following submission of the PEA in December 2017, the CPUC and BIA participated in a second site visit and agency meeting in August 2019. At this meeting, the Applicant presented a proposed revision to the alignment and methods of installation for Segment 5, and meeting attendees visited several sections of the Project alignment.

Since initiation of the Project in 2015, the CPUC has undertaken periodic outreach to participating agencies, advising them of the status of the Project via email and telephone and offering agency staff the opportunity for in-person meetings with the CPUC (ESA, 2018). To date no agency has requested an in-person meeting or separate conference call. The CPUC and BIA have also participated in several telephone conferences with specific agencies to discuss various aspects of the Project, including calls with the U.S. Fish and Wildlife Service (teleconferences in April and September of 2018 and in February 2022) and NPS (teleconferences in June 2018 and January 2020), as well as numerous email exchanges between both agencies and the CPUC and BIA.

Following the publication of this ISMND/EA in June of 2022, the CPUC mailed a notice of intent to adopt and notice of availability of an environmental assessment to relevant agencies, organizations, and individuals residing in the Project area (**Appendix G**), announcing that the Draft ISMND/EA to be available for public review. The CPUC established a Project voice mail phone number, (707) 796-7009; email address, KlamathBroadbandCEQA@esassoc.com; and Project website: <https://ia.cpuc.ca.gov/environment/info/esa/klamath/index.html>, to enable the public to ask questions, provide comments, and obtain additional information about the Project and the analysis in the Draft ISMND/EA.

Pursuant to State CEQA Guidelines Section 15105(b), this Draft ISMND/EA is being circulated for public review and comment. The 30-day public review period is taking place from June 24, 2022 to July 25, 2022. Written comments by mail or email will be accepted by the CPUC and must be received no later than 5 p.m. on July 25, 2022. Copies of all written comments on the Draft ISMND/EA submitted within the public review period will be included in the Final ISMND/EA.

This Draft ISMND/EA and supporting documentation are posted on the CPUC environmental review project website at: <https://ia.cpuc.ca.gov/environment/info/esa/klamath/index.html>.

Written comments regarding the Draft ISMND/EA may be submitted by mail:

CPUC Klamath Broadband Project
c/o ESA, attn.: Maria Hensel
1425 N. McDowell Blvd., Suite 200
Petaluma, CA 94954

Or via email: KlamathBroadbandCEQA@esassoc.com

1.5 Project Permit and Approvals

Table 1-1 presents a summary of the various permits and approvals that may be required for the Project's implementation.

**TABLE 1-1
SUMMARY OF PERMITS AND APPROVALS**

Agency	Permit/Approval Required	Agency Action
Federal		
U.S. Bureau of Indian Affairs (lead NEPA agency)	Approval for some uses of the ROW	In consultation and coordination with the Yurok and Karuk Tribal Councils, considers permitting construction, operation, and maintenance of fiber optic cables, conduits, and related facilities on lands held in trust for the Karuk or Yurok Tribes.
State Historic Preservation Officer/Tribal Historic Preservation Officer	Consultation under Section 106 of the National Historic Preservation Act	Concurs on whether the Project may affect cultural resources that are either listed on or eligible for listing in the National Register of Historic Places.
U.S. Forest Service	Temporary Use Permit	Considers issuance of a Temporary Use Permit for temporary activities in a construction right-of-way on National Forest System Lands.
U.S. Forest Service	Revised SF-299, Application requesting a Right of Way for Transportation and Utility Systems and Facilities on Federal Lands, Special Use Authorization	Considers amendment to SF-299, Special Use Authorization to include the Yurok Signal connection; to occupy a portion of National Forest System lands in Six Rivers National Forest and operate a fiber optic line and wireless system.
U.S. Army Corps of Engineers, San Francisco District	Clean Water Act Section 404 Permit	Considers issuance of a Section 404 permit for the placement of dredged or fill material in waters of the United States, including jurisdictional wetlands.
U.S. Bureau of Land Management	Right-of-way permit	Considers issuance of right-of-way permit across public lands managed by USDO and BLM's Arcata Field Office.
U.S. Fish and Wildlife Service	Consultation under Section 7 of the federal Endangered Species Act	Consults on lead agency finding of impact on federally listed species.
National Park Service	Right-of-way permit	Considers issuance of a right-of-way permit.

TABLE 1-1 (CONTINUED)
SUMMARY OF PERMITS AND APPROVALS

Agency	Permit/Approval Required	Agency Action
State		
California Public Utilities Commission	CASF grant approval (CEQA lead agency)	After consideration of the environmental effects of the Project, determine whether to issue grant funding under the CASF program.
California Public Utilities Commission	Revised CPCN for a Facilities-Based CLEC (CEQA lead agency)	Consider issuance of a revised CPCN to the Applicant as a Facilities-Based CLEC to allow the construction, operation, and maintenance of the fiber optic cable, wireless towers, and associated facilities.
California Department of Fish and Wildlife	California Endangered Species Act concurrence (2080.1)	Determine whether the federal ESA declaration meets CESA standards.
California Department of Fish and Wildlife	Lake and Streambed Alteration Agreement (1602)	Consider issuance of a 1602 permit to allow installation of fiber optic cable in roadside ditches that also carry waters of the state, and to allow installation of fiber optic cable beneath waters of the state.
California Department of Forestry and Fire Protection	Permission to cross CAL FIRE parcel	Consider application for permission to cross CAL FIRE parcel at Elk Camp Fire Station on Bald Hills Road.
California Department of Transportation	Encroachment permit	Consider issuance of an encroachment permit for underground and overhead installations within the easements or properties on state highways (96, 169, and 101).
California State Lands Commission	Easement, upland	Consider issuance of an easement for the Project across an upland parcel along Bald Hills Road.
California State Lands Commission	Lease or lease amendment, for projects within CSLC's sovereign lands, including navigable and tidal waterways.	Consider issuance of a lease or lease amendment for the Project to cross the Klamath River at Martins Ferry and at Orleans.
California Department of Parks and Recreation	Permanent easement; Right-of-Entry (ROE) permit to access PG&E poles	Consider issuance of a Right of Entry Permit for temporary activities in a ROW across State Parks-managed lands.
North Coast Regional Water Quality Control Board (Region 1)	Clean Water Act Section 401 certification of USACE 402 permit	Determine whether the terms and conditions of the USACE 402 permit meet California clean water standards.
North Coast Regional Water Quality Control Board (Region 1)	Clean Water Act Section 402 Construction General Permit (NPDES permit)	Decide whether to issue coverage under the Construction General Permit.

TABLE 1-1 (CONTINUED)
SUMMARY OF PERMITS AND APPROVALS

Agency	Permit/Approval Required	Agency Action
Local		
Humboldt County Board of Supervisors	Memorandum of agreement	Decide whether to sign a revised memorandum of agreement with the Applicant allowing occupancy of county roads and bridges with fiber optic cable for the Project.
Humboldt County Planning and Building	Building permit	Issue a building permit to allow construction of the broadband tower, its appurtenant buildings, generator, and electrical connection in Orick.
Humboldt County Public Works	Encroachment permit	Consider issuance of an encroachment permit for underground and overhead installations within the easements of Humboldt County roads and bridges.

NOTES: Applicant = the Karuk Tribe; BLM = U.S. Bureau of Land Management; CAL FIRE = California Department of Forestry and Fire Protection; CASF = California Advanced Services Fund; CEQA = California Environmental Quality Act; CESA = California Endangered Species Act; CLEC = Competitive Local Exchange Carrier; CPCN = Certificate of Public Convenience and Necessity; CSLC = California State Lands Commission; ESA = Endangered Species Act; NEPA = National Environmental Policy Act; NPDES = National Pollutant Discharge Elimination System; Project = Klamath River Rural Broadband Project; USACE = U.S. Army Corps of Engineers; USDO I = U.S. Department of the Interior

SOURCE: Data compiled by Environmental Science Associates in 2021

CHAPTER 2

Project Description

2.1 Introduction

The Karuk Tribe (Project Applicant or Applicant), a California utility service provider (Competitive Local Exchange Carrier), is the lead applicant and fiscal agent for the Klamath River Rural Broadband Initiative (the Project). The Applicant proposes to construct and operate the Project, which would provide high-speed internet service to numerous communities in northern Humboldt County. The Project would involve the installation of about 104 miles of cable in northern Humboldt County in an area that includes several small towns: Orleans, Weitchpec, Wautec, Ka’Pel, Tulley Creek, Orick, and McKinleyville. The closest metropolitan areas are the city of Eureka, approximately 14 miles south of McKinleyville; and the city of Redding, approximately 140 miles to the east.

2.2 Project Overview

The Project would involve installation of a middle-mile¹ fiber optic network and last-mile² broadband networks to provide high-speed broadband internet access to an area of approximately 80 square miles (the Project area), serving seven first responder agencies and 19 other anchor institutions (Karuk Tribe, 2020). An *anchor institution* is a basic community facility that provides an important public service such as public safety, education, or other governmental service. Anchor institution locations were used to help define the location of the proposed fiber optic routes. The Project would provide service to anchor institutions, along with approximately 616 households and other businesses in the Project area. For easy reference, the proposed broadband network is divided into five distinct segments. A brief summary of each of the five proposed alignment segments is provided in Section 2.3. **Figure 2-1** presents an overview of all segment locations.

2.3 Segment Overview

The Project is proposed in a remote, rural area of Humboldt County with low population density. The communities in this area have low median household incomes, high unemployment rates, and limited local economic opportunities (Karuk Tribe, 2020). The Project area includes lands

¹ *Middle-mile* facilities are the five segments of the Project that provide the connection between the “last-mile” facilities and the regional long-distance fiber optic network.

² *Last-mile* facilities connect individual customers (commercial, institutional, domestic) to the middle-mile network.

managed by various tribal nations, federal and/or state agencies, and private entities. **Table 2-1** shows land ownership for each of the proposed segments. As depicted in **Figures 2-2** through **2-8**, the segments are as follows:

Segment 1 (Figure 2-2): Orleans to Weitchpec (15.2 miles). Segment 1, from Orleans to Weitchpec, crosses Karuk Trust land, private lands, land owned by the Applicant, lands administered by U.S. Forest Service and BLM, and lands within the Yurok Reservation. This segment alignment follows State Route (SR) 96. Segment 1 would include a 0.5-mile spur (secondary line) serving the offices of the California Department of Transportation (Caltrans) and the Applicant, and spur extensions to the existing Orleans broadband tower and the existing Frontier Communications landline central office in Orleans. Frontier is the incumbent local exchange carrier for most of the Project area. Except for about 0.5 miles along Dredge Road (now a Humboldt County road crossing private lands) and across private lands, Segment 1 lies within the Caltrans easement for SR 96. Land uses adjacent to Segment 1 are predominantly forest. The segment would not pass through any agricultural lands.

Segment 2 (Figure 2-3): Weitchpec to Wautec (24.2 miles). Segment 2, from Weitchpec to Wautec, lies entirely within the Yurok Reservation for approximately 24.2 miles. This segment alignment connects Weitchpec and Wautec along SR 169 and crosses Yurok Fee lands, Yurok trust and allotment lands, and privately held lands. The alignment would include a 2-mile spur to the Yurok Tribe's Tulley Creek facility and a 0.1-mile spur that would serve the Yurok Tribal Community Center in Weitchpec and provide an interconnect option for Frontier and Hunter Communications. Segment 2 lies in an area that is predominantly forested and would not pass through any agricultural lands.

Segment 3 (Figure 2-4): Weitchpec to Elk Camp (21.9 miles). This segment alignment connects Segment 2 to Segment 4 using Bald Hills Road. The segment alignment continues from the point where the Tulley Creek facility spur would be located along Bald Hills Road to Elk Camp, and would include a 0.1-mile spur to the Elk Camp Fire Station. This segment originates within the Yurok Reservation, crossing at least one trust parcel (Assessor's Parcel Number 531-094-005-000) about 4.9 miles from its origin and passing through trust and private lands within the reservation, then private [including Green Diamond Resources (GDR) lands], state, and National Park Service (NPS) lands that underlie the Humboldt County easement for Bald Hills Road through Redwood National Park (RNP). Land uses adjacent to Segment 3 are predominantly private forested lands and land under the jurisdiction of NPS.

Segment 4 (Figure 2-5): Elk Camp to Orick (11.8 miles). This segment alignment follows Bald Hills Road from Elk Camp to U.S. Highway 101 (U.S. 101) just north of Orick, then through the town of Orick to the proposed location of a new wireless tower (the Orick Tower, **Figure 2-6**). This segment would include spurs connecting to the existing Redwood National and State Parks, South Operations Center (shared by NPS and State Parks), to the proposed new visitor center at the intersection of Bald Hills Road and U.S. 101, and to the existing Frontier Communications office in Orick. This segment would be located in areas under private ownership as well as lands

**TABLE 2-1
MILES CROSSED BY LAND OWNERSHIP PER SEGMENT**

Project Component	Landowner/Land Manager															TOTALS
	State/County					Tribal						Federal			Private Lands	
	Caltrans	CSLC	CAL FIRE	State Parks	Humboldt County	Yurok Fee	Yurok Trust	Yurok Allotment	Karuk Trust	Karuk Fee	Hoopa Fee	USFS	NPS	BLM		
Segment 1	0.3	0.0	0.0	0.0	0.2	0.3	1.5	0.1	0.1	0.8	0.0	8.8	0.0	0.6	2.4	15.2
Segment 2	0.3	0.2	0.0	0.0	0.0	4.5	3.3	2.1	0.0	0.0	0.0	0.0	0.0	0.0	13.8	24.2
Segment 3	0.0	0.4	0.0	0.0	0.0	1.7	0.3	0.0	0.0	0.0	0.3	0.0	7.9	0.0	11.3	21.9
Segment 4	0.9	0.0	0.1	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.2	0.0	1.4	11.8
Segment 5	1.3	0.0	0.0	3.9	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	22.5	31.0
Total for Segments	2.8	0.6	0.1	3.9	3.6	6.5	5.1	2.2	0.1	0.8	0.3	8.8	17.1	0.6	51.4	104.0
Orick Tower/Connection	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1
Yurok Signal Connection*	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total for All Components	2.8	0.6	0.1	3.9	3.6	6.5	5.1	2.2	0.1	0.8	0.3	8.8	17.1	0.6	51.5	104.1

NOTES:

BLM = U.S. Bureau of Land Management; USFS= U.S. Forest Service; CAL FIRE = California Department of Forestry and Fire Protection; Caltrans = California Department of Transportation; CSLC = California State Lands Commission; NPS = National Park Service; State Parks = California Department of Parks and Recreation

* Yurok signal connection estimated at one-quarter acre, or equivalent to less than 0.1 mile.

* Totals are approximated to the closest decimal point.

SOURCE: Karuk Tribe, 2020

held by GDR, a California Department of Forestry and Fire Protection parcel (Elk Camp Fire Station), and NPS. Land use comprises forested park lands, agricultural lands, and some areas of rural residential and commercial.

Segment 5 (Figures 2-7 and 2-8): Orick to McKinleyville (31.0 miles). The alignment for this segment (referred to as Segment R5³ in the 2020 PEA) follows U.S. 101 from the proposed Orick Tower, through the town of Orick to the intersection of Hiltons Road and U.S. 101 and on to McKinleyville along the existing PG&E Orick to Essex 60kV transmission line, then underground and overhead along Murray Road and Central Avenue. Segment 5 would be installed on existing overhead distribution poles, then overhead transmission poles; it would then be installed underground for approximately 3.7 miles, then on overhead distribution poles once again until its terminus in the AT&T central office. Segment 5 would be located across private lands, California State Park lands, and roads managed by Caltrans and Humboldt County. Land uses along Segment 5 include rural residential for 1.5 miles in Orick, commercial forests across GDR lands, and rural residential for 4.7 miles from Fieldbrook to McKinleyville along Murray Road and Central Avenue.

2.4 Current Internet Access

The communities and residents in the Project area currently have inadequate internet access. The Applicant estimates that around 75 percent of the populations of Orleans, Weitchpec, Ka’Pel, and Wautec were underserved for internet access (Karuk Tribe, 2020). Orick is listed on the California broadband map as partially served, where an unknown percentage of households has access to full broadband service according to the California standard (CPUC, 2018). Satellite internet is currently the most common form of access in the Project area. The following services are currently available:

- **Orleans:** In October 2015, the Applicant launched Áan Chúuphan, a wireless Internet provider in Orleans. As of 2020, Áan Chúuphan had more than 100 subscribers, and provided internet access to most of the Orleans area (Karuk Tribe, 2020). Áan Chúuphan offers plans up to 3.2 megabits per second (Mbps) download and 1.4 Mbps upload. Most of Orleans is now considered underserved, but some of the surrounding area is still unserved.
- **Weitchpec, Ka’Pel, and Wautec:** These three communities are served by Yurok Connect, the Yurok Tribe’s wireless internet provider. The maximum speed available to Yurok Connect subscribers is 6 Mbps download and 1.5 Mbps upload. The 6 Mbps service requires a premium account, the cost of which prevents many residents from purchasing it. In California overall, the average download speed is 29.1 Mbps. An estimated 96.5 percent of Californians have access to wired broadband 25 Mbps or faster (Broadband Now, 2020). A few households in the Project Area have limited access to U.S. Cellular or Verizon Wireless 3G service, but such service will be discontinued by the end of 2022 and is generally not available throughout these communities

³ To reduce environmental impacts and installation costs, between the initial (2017) and subsequent (2020) submittals of the Proponent’s Environmental Assessment (PEA), the Applicant changed the proposed location of part of Segment 5 (the connection from Orick to the larger broadband network). The amended PEA (submitted to CPUC in May 2020) refers to the new alignment for Segment 5 as Segment R5 (as revised) to distinguish it from the originally proposed alignment in the 2017 PEA. In this document, the term Segment R5 is not used; instead the term *Segment 5* refers to the alignment for this segment as currently proposed.

because of limited signal transmission through dense forests from cell towers located more than 20 miles away.

- **Orick:** In May 2015, Tsunami Wireless expanded services into Orick, offering speeds of 6.5 Mbps download and 1.6 Mbps upload. A few households in this community are served by Verizon Wireless 3G or 4G services, but these services are generally not available throughout the community. The partial cellular service is attributable to the location of cell towers, which are placed to provide service to U.S. 101, not the community of Orick (Karuk Tribe, 2018a).

2.5 Project Elements

2.5.1 New Internet Access

The Project would integrate new broadband service into the network of services currently offered by existing providers. Service speeds under the Project would be at least 10 Mbps download and 1 Mbps upload. Existing Yurok Connect and Áan Chúuphan subscribers would be integrated into the Project network through the formation of a single new combined internet service provider. The Project would also include the installation of new fiber optic interconnections with the Frontier Communications network at three locations: Frontier’s central offices in Orick and Orleans and a fiber splice box in Weitchpec. A fiber optic connection would also be installed with the Tsunami Wireless network at an existing communications tower located near Orick.

The fiber optic network built by the Project would also be able to support cellular networks. Cellular service carriers, such as Verizon Wireless and U.S. Cellular, could opt to lease space on Project towers or request a connection into the Project network. Such connections may require subsequent or additional environmental evaluation and are not proposed as part of the Project.

2.5.2 Project Components

The Project includes a number of components:

- **Broadband fiber optic cable:** Wide-bandwidth data transmission cable that transports signals for high-speed internet access.
- **Wireless tower:** A tower used to mount antennas conveying a network signal. The “last-mile” (see below for details) connection to the user is via radio signal from the tower to a wireless device.
- **Spur segment:** A secondary branch off the main line.
- **Repeater system:** A device used to regenerate or replicate a signal distorted by transmission loss.
- **Relay station:** A location where a connection is employed in wireless networks by means of nodes, because the distance between the source and destination is greater than their transmission range or the direct signal path is blocked by intervening geographic features.
- **Wireless antenna:** A device that converts between radio frequency and electrical current. Antenna installation extends the range of wireless networks.

- **Generators and associated containers and infrastructure:** Equipment used to provide power to existing wireless towers that are not connected to the national electrical grid.
- **Last-mile facilities:** Facilities that connect individual customers (commercial, institutional, and domestic) to the middle-mile network. Last-mile facilities are not located⁴ within the broadband alignments, but would be constructed between the main cables and the anchor institutions and other customers. Last-mile service would generally be supplied wirelessly; however, some anchor institutions would receive a direct cable connection.

2.5.3 Segment Descriptions

The Project is proposed as five segments totaling approximately 104 miles. These segments consist of “middle-mile” facilities, which are fiber optic cable connections between the larger national fiber optic network and “last-mile” services (see Section 2.5.5). Additional details of each segment are provided below.

Segment 1: Orleans to Weitchpec

Segment 1 would include the installation of 15.2 miles of broadband fiber optic cable, one two-element repeater system, one relay station, and modifications to a pre-existing wireless tower (Figure 2-2). Beginning at the Orleans Karuk Tribal buildings near Orleans Elementary School (Figure 2-2) at the demarcation point for the Áan Chúuphan broadband service, the new cable would connect into the tribal buildings and would then follow the existing joint-use⁵ utility poles west on SR 96, west on Dredge Road, then across private land and Karuk fee land back to SR 96 near the crossing of Camp Creek, installed overhead on existing poles. Section 2.6.4, provides more details of overhead installation construction methods. After approximately 1.3 miles, the installation method would transition to underground and remain so for the remainder of the segment from Camp Creek Road to the intersection of Weitchpec School Road. Section 2.6.4 provides more details of underground construction methods.

This segment would cross Slate, Bluff, and Aikens Creeks, with cable hung on bridges at these three creek crossings (see Section 2.6.4 for more details). Segment 1 would continue in the inboard ditch along SR 96, terminating at Weitchpec School Road.

This segment would include two 0.1-mile spurs. Cable for one spur would be hung on the existing overhead distribution line before transitioning to an underground position within an existing 3-inch conduit extending to the existing Orleans broadband tower. On the second spur, cable would be hung on existing poles and would connect to the Frontier landline central office in Orleans.

Segment 1 would also include the proposed construction of one 0.5-mile spur that would serve the Orleans Caltrans Maintenance Yard and the Karuk Tribal Department of Natural Resources (Karuk DNR)/Community Building (Figure 2-2). This spur would start from the existing overhead Áan Chúuphan fiber optic cable just northeast of the demarcation point. This would

⁴ Several spurs that are listed as part of the segments do serve an anchor institution directly.

⁵ Joint-use poles are existing power distribution poles already in use by at least one communications provider.

require a crossing over the Klamath River. In Orleans, a new pole⁶ would be erected immediately adjacent to the existing joint-use utility pole and the new fiber optic cable would be strung across the Klamath River, running parallel to the existing copper cable crossing owned by Frontier Communications. The new fiber optic cable would connect to a new pole on the east side⁷ of the river, immediately adjacent to the existing Frontier Communications pole. The spur would then follow the existing joint-use poles northeast to the Caltrans yard, then turn due east and use an intermediate new pole just in front of the Karuk DNR facility within the Caltrans right-of-way (ROW), then continue to the existing poles at the eastern edge of the Karuk DNR facility.

Segment 1 would also include installation of a cable connection to Áan Chúuphan's existing 90-foot tower southwest of the town center in Orleans, on property belonging in fee to the Karuk Housing Authority (Figure 2-2). This tower, currently served wirelessly by Áan Chúuphan, would be served by fiber optic cable with the Project. Fiber optic cable would extend from the main Project alignment on existing joint-use poles to connect to existing transformer pole near the tower. The cable would be installed within an existing underground conduit and would terminate at the tower.

Segment 2: Weitchpec to Wautec

Segment 2 would include the installation of 24.2 miles of broadband fiber optic cable, including a 1-mile spur line to the Yurok Tulley Creek Facility, three additional spurs, three replacement generators, and repair of one additional generator. This segment (Figure 2-3) would start where Segment 1 leaves SR 96 east of Weitchpec. From SR 96 to SR 169, the cable would be installed underground for a distance of 0.5 mile, then would transition to an overhead position for approximately 1.5 miles, using existing multi-use poles at the existing Yurok Tribal facilities' lateral tap in Weitchpec. Segment 2 would then be installed overhead on existing poles, extending approximately 6.6 miles to the north in the utility corridor from SR 169. The alignment would continue west from SR 169 to Upper Cappell Road, crossing several creeks (including Miners Creek, Rube Creek, and Cappell Creek), and would follow Lower Cappell Road before reconnecting with SR 169 in an underground position. At Cappell Creek, Segment 2 would proceed overhead on existing poles to McKinnon Hill Road (a Yurok Tribal road) and connect to the Ka'Pel Head Start building. The alignment would then continue west and then in a northerly direction on existing poles to Wautec.⁸ This segment would augment existing service to a wide range of anchor institutions (Figure 2-3). This segment would include several spurs, described in more detail below.

The first spur would begin approximately 0.1 miles from the origin of Segment 2. A 0.3-mile spur would be installed in an underground position along an existing road to serve the Weitchpec Magnet School (Figure 2-3). A second spur, less than 0.1-mile long and located approximately 0.3 mile from the origin of Segment 2, would be installed in an overhead position using existing poles to connect to the Yurok Tribal and Community Facility.

⁶ The new pole on the west side of the river would be located on private property at latitude 41.305, longitude -123.535.

⁷ The new pole on the east side of the river would be located on private property at latitude 41.304, longitude -123.532.

⁸ New Pacific Gas and Electric Company (PG&E) utility poles were installed in 2017 from Ka'Pel to Wautec. This analysis assumes that the PG&E poles would be available for fiber optic installation with an appropriate pole joint-use agreement. No other communication carrier is currently installed on the new PG&E poles, nor are there plans at this time for another carrier.

Approximately 3.8 miles from the origin of Segment 2, a 1.1-mile spur would be installed on existing joint-use utility poles. This spur would require a crossing of the Klamath River. Two new poles would be used for this crossing (Karuk Tribe, 2018b). The spur would be a splice off the main line running to Wautec and would be installed on the south side of the river on a new pole, which would be erected immediately adjacent to the existing joint-use pole. The cable would be strung across the Klamath River, parallel to the existing cable crossing owned by Frontier Communications. On the north side of the Klamath River, a second new pole would be erected immediately adjacent to the existing Frontier Communications pole. From that new pole, the new fiber optic cable would then be installed on existing joint-use poles along Tulley Creek Road until reaching the Yurok facility.

A fourth spur would be constructed approximately 21 miles from the start of Segment 2. This 0.2-mile spur would use existing utility poles and would serve the Jack Norton School.

Segment 2 would also include the proposed replacement of generators for two existing Yurok wireless towers (Miners Creek, and McKinnon Hill) and minor work at a third tower (Weitchpec). These towers would communicate through wireless links to a tower in Requa (on the coast near Klamath), and from there through additional wireless links to Crescent City.

Weitchpec Tower

The existing equipment container at the Weitchpec Tower (Figure 2-3) would require replacement. This would be undertaken within the existing footprint and would consist of the replacement of the container and uninterrupted power supply.

Miners Creek Tower

The Miners Creek Tower site (Figure 2-3), located on Yurok Trust land, would require replacement of its 8-foot by 20-foot Conex equipment container used to house the radio/switching/electrical equipment. The roof of the existing container is unstable and leaks. The new equipment container would be located on the same footprint as the existing container. The existing diesel backup generator would be replaced with a newer, more efficient generator. A Supervisory Control and Data Acquisition (SCADA) pack would be installed to remotely monitor fuel levels, battery charge levels, and other equipment status. Additional solar panels would be installed to reduce the use of the backup generator. Solar panels would be mounted on the Conex container.

McKinnon Hill Tower

The Project also proposes the installation of additional power backup equipment at the McKinnon Hill Tower (Figure 2-3) to provide redundancy for the network. To provide a redundant power system, an additional 8-foot by 20-foot Conex equipment container would be installed and used to house a new generator, fuel tank, battery bank, and charge controller, and additional solar panels. The new container would be placed next to the existing container on already cleared land. No ground disturbance would be required. A SCADA pack would also be installed to remotely monitor fuel levels, battery charge levels, and other equipment status.

Wautec Tower

In addition to these wireless tower upgrades, the Wautec Firehouse (Figure 2-3), which would become a major backbone intersection point for the Project, would require the installation of a backup generator with automatic transfer switch. The site already has a propane tank and an existing generator pad. The existing generator needs replacement and an electrical upgrade to work with the newly installed PG&E grid.

Segment 3: Weitchpec to Elk Camp

Work along Segment 3 would include the installation of 21.9 miles of broadband fiber optic cable, including two short spurs. Segment 3 would begin at Segment 2 west of Weitchpec and continue along Bald Hills Road through Elk Camp toward Orick in an underground installation (Figure 2-4).

The first 5 miles of Segment 3 would be located within the Yurok Reservation along Bald Hills Road between dense forest stands, while the next 8 miles would cross private parcels, also within dense forest stands. At about 13 miles from its origination point, Segment 3 would cross into RNP and would continue along Bald Hills Road along the northeastern edge of the park for an additional 8.9 miles to the Elk Camp Fire Station, an anchor institution.

Segment 3 would include two spurs. The first, a 160-foot spur approximately 4.8 miles from the segment's origination point, would be constructed in an underground trench to connect to the existing Yurok Wiregrass Tower adjacent to the existing Yurok Veterans Cemetery. The second spur, at the terminus of Segment 3, would be a 100-foot spur installed in an underground trench to serve the Elk Camp Fire Station.

Segment 3 work would include the proposed replacement of a generator for an existing Yurok wireless tower (Wiregrass). The Wiregrass Tower site (Figure 2-3), located on Yurok Trust land, would require a 20-foot extension on its existing tower and a replacement generator. The tower extension would require the installation of guy wires. The existing tower is approximately 30 feet tall and is self-supporting. With the additional height of 20 feet, the tower would require guy wires for wind loading. Installation of the guy wires would require three holes, each of which would require the excavation of approximately 8 cubic feet of earth. The existing diesel backup generator would be replaced with a newer, more efficient generator. A SCADA pack would be installed to remotely monitor fuel levels, battery charge levels, and other equipment status. Additional solar panels would be installed to reduce the use of the backup generator. Similar to the towers in Segment 2, this tower would communicate through wireless links to a tower in Requa (on the coast near Klamath) and onward to fiber optic service from Crescent City.

Segment 4: Elk Camp to Orick

Segment 4 would include the installation of 11.8 miles of broadband fiber optic cable, including four short spurs. This segment alignment would follow Bald Hills Road in an underground position from Elk Camp to U.S. 101 just north of Orick (Figure 2-5). At the terminus of Bald Hills Road, Segment 4 would be installed under U.S. 101 (via directional drilling; see Section 2.6.4 for more details), then would continue along the west side of the highway to an existing

overhead joint-use pole. The cable would then be installed overhead on existing poles and would connect to the proposed Orick Tower (Figure 2-5).

Segment 4 would include four spurs, each 0.1 mile long or shorter. Spurs would be constructed to the proposed new Orick Tower; to the existing State Parks office at the Southern Operations Center facility shared with NPS; to the proposed new visitor center at the intersection of Bald Hills Road and U.S. 101 just east of Orick; and to the existing Frontier Communications office in Orick (Figure 2-5).

Segment 4 would also include a proposed crossing of Prairie Creek using a bridge hang just north of Orick and a crossing of Redwood Creek just south of U.S. 101 in Orick, which is anticipated to require the installation of two new poles.

Orick Tower

Segment 4 work would also include the proposed construction of a new 90-foot wireless tower, the Orick Tower, on a 0.5-acre, non-exclusive occupancy easement located on private lands south of U.S. 101. The site, currently used for cattle production, would not require, nor include removal of any existing buildings (Figure 2-6). This tower would be installed in a small fenced graveled yard and would include a backup generator, a propane tank to supply the generator, and a small prefabricated hut, up to 8 feet wide by 13 feet long by 8 feet high, that would house electronics to power and control the tower signals. The generator, designed to turn on automatically in the event of a power outage, would allow for reliable internet service during power service interruptions. The generator's specifications indicate that its noise level is 63 A-weighted decibels at a distance of 23 feet from the generator (Karuk Tribe, 2018c). The Orick Tower would not require permanent lighting but would include a motion-sensitive light at the entrance.

Segment 5: Orick to McKinleyville

Segment 5 would include the installation of 31 miles of broadband fiber optic cable, including one spur, and connection to the existing fiber optic network. Segment 5 would provide the final connection from the Project's service area to the larger fiber optic network in the Eureka-Arcata-McKinleyville area (Figure 2-8). This segment would cross portions of the Humboldt Lagoons State Park and the Harry A. Merlo State Recreation Area (Figure 2-7).

Approximately 88 percent of this segment would be installed on existing poles with minimal or no ground disturbance. The remaining 12 percent would be installed in roadside ditches by trenching or directional drilling. This segment would follow U.S. 101 from the proposed Orick Tower, described in more detail above, through the town of Orick to the intersection of U.S. 101 and Hiltons Road. The route would then continue overhead, south on the existing PG&E 60-kilovolt transmission line poles, staying northeast of Freshwater Lagoon and following the old highway around Stone Lagoon, then paralleling U.S. 101 to Big Lagoon. At Big Lagoon, the alignment would continue on PG&E poles across GDR land, closely paralleling and mostly adjacent to Hammond Truck Road. The alignment would then turn southeast, following Old Railroad Grade Road to Murray Road near Fieldbrook. The route would then leave the transmission line, following Murray Road underground and overhead west and south into McKinleyville, turning south overhead on Central Avenue, and ending at 1555 Railroad Drive in a short directionally-drilled underground portion to the AT&T central office in McKinleyville.

The Segment 5 alignment would include a short (less than 0.1 mile) fiber spur serving the Tsunami Tower above Orick, another short (less than 0.1 mile) spur serving the Stone Lagoon Visitor Center, and a pole established in the PG&E ROW to enable a wireless connection to the Patrick's Point State Park Visitor Center.

2.5.4 Yurok Signal Connection (Orleans Mountain and Antenna Ridge)

Construction of the Yurok signal connection, which would comprise facilities housing an antenna and repeater system, would require some upgrades on Orleans Mountain⁹ in an existing radio hut and on Antenna Ridge (Figure 2-2). This connection would strengthen the Project's connection and would provide another signal source to provide service redundancy in the event of a connection failure elsewhere in the network.

A Yurok signal connection consisting of a two-element repeater system (to pick up and rebroadcast the Yurok wireless broadband signal) would be installed at the existing Orleans Mountain radio repeater site and on Antenna Ridge. Both sites are located within Six Rivers National Forest (Figure 2-2). Antenna Ridge is a rocky ridge, immediately south of the existing access road to Orleans Mountain, that was used in the 1960s to pick up and rebroadcast television signals for the town of Orleans. The Antenna Ridge site was abandoned in the early years of the 21st century. The remains of the old antennas, a solar panel set with a supporting pole, and a battery box, currently on-site, would be cleared and replaced with new equipment including a 30-foot lattice tower, solar panels, batteries, hut, repeater radio, and antennae, enclosed with a fence.

Connection with Service Providers in Orleans and McKinleyville

Orleans: The Project would interconnect with the Áan Chúuphan fiber optic connection, which is connected to Siskiyou Telephone's fiber optic system via a pre-existing fiber run. This interconnection would be completed at the Áan Chúuphan equipment rack in the Karuk Tribal Council Chambers Building in Orleans.

McKinleyville: The alignment would interconnect with AT&T inside the existing AT&T central office building on Railroad Drive in McKinleyville. In the future, the Project may also interconnect with Suddenlink service within this same building.

2.5.5 Last-Mile Facilities

"Last-mile" facilities are those that deliver the fiber optic signal from the main cable to the end user. Last-mile facilities would not be located within the broadband alignments, but would be constructed between the main cables and the anchor institutions, businesses, and residences receiving service. Anchor institutions within the Yurok Reservation would receive direct connections (fiber service drops) to provide maximum throughput. Other anchor institutions would be served with direct

⁹ To ensure that there is sufficient connection capacity at the Orleans Mountain location, the Karuk Tribe is in negotiation with the Orleans Volunteer Fire Department (OVFD) for the co-location of the OVFD repeater at the Antenna Ridge site. Since the OVFD repeater and antenna are currently located on Orleans Mountain, with its move to Antenna Ridge sufficient room should be available in the vault.

connections, gigabit passive optical network¹⁰ switches, or wireless service. Some concentrated tenant locations (i.e., housing developments), and small communities may be served using gigabit passive optical network devices or wireless networks. Direct connections would supply fiber optic signals to existing wireless towers and to the new Orick Tower. Other antennae that serve portions of a community may be served from the wireless towers with a wireless signal.

Where the middle-mile fiber would be located underground, fiber service drops would be connected to the middle-mile fiber cable using underground splice vaults along the fiber alignment. These vaults would be installed in-line to provide the fiber drops to each anchor institution. Vaults would require 3-foot by 4-foot holes approximately 2 feet deep and would include a traffic-proof cover. Where the middle-mile fiber would be located overhead, a loop of the cable would be brought down in an enclosed riser on the pole. In an underground vault adjacent to the pole, two strands of the 144-strand cable would be spliced into and routed from the main cable, likely as part of a 12-strand fiber optic cable. From the vault, the 12-strand cable would be carried in a conduit underground to the building, antenna, or tower to be served.

When the final service location would be within an anchor institution, backup power would likely be provided by that institution. When the final service location would be a wireless tower, backup power would be provided by a combination of battery-based uninterruptable power supply and a propane generator located in an enclosed structure at the base of the tower. The switching building would be supplied with a 220-volt, 50-amp service from the local electrical utility where available. The building, generator, propane tank, and tower would be enclosed within a chain-link fence with a locked gate.

Wireless services would be provided by a series of radios and antennae, located on either the new Orick Tower or existing communication towers. In areas of clusters of homes or businesses, an access point may be installed within a half-mile radius. An access point is a radio about the size of a football, mounted on an 8- to 20-foot pole (depending on location), that also includes two to four antennas on top of the pole. The pole may be installed independently, requiring either competent native-material backfill or a small poured concrete footing, or attached to a building. Should a building be used to support an access point, mounting brackets would be attached to the building and a small stand-off pole would be attached if required. The access points would receive and rebroadcast signals for multiple homes or residences. Access points can serve line-of-sight, near-line-of-sight, and non-line-of-sight customers, depending on the radio frequencies used.

Subscriber modules would receive the wireless signal and translate it to a standard network signal for use in homes or businesses. A small radio, usually 6 inches by 6 inches, would be attached to the side of the home or business using a one-armed bracket near the top of the building. These radios are designed to run on standard AC power, and would connect with a Category 5/6 Ethernet cable into the building where it would connect to a router for either Wi-Fi or wired use. In some cases, an antenna would be installed separately from the radio, with antenna sizes varying from 6 inches by 6 inches to a 2-foot-diameter dish.

¹⁰ A distinguishing feature of a gigabit passive optical network is that it implements a point-to-multipoint architecture in which unpowered fiber optic splitters are used to enable a single optical fiber to serve multiple endpoints, which allows for multiple homes and/ or small business to receive service from a single feeding fiber

2.6 Project Construction

2.6.1 Overview

Project construction would consist of the following phases:

- Preconstruction acquisition of ROWs and easements.
- Installation of middle-mile fiber optic cable.
- Construction of the Orick Tower.
- Generator upgrade and other upgrades at the existing Yurok towers.
- Construction of Yurok signal connection facility on Orleans Mountain and Antenna Ridge.
- Connection with service providers in Orleans and McKinleyville.
- Installation of the last-mile component.

Table 2-2 shows the acreages of temporary and/or permanent disturbance that would result from the Project.

TABLE 2-2
TEMPORARY AND PERMANENT DISTURBANCE* PER SEGMENT (IN ACRES)

Segment	Disturbance Type	Overhead New	Sawcut	Sawcut Rock	Trench	Trench Rock	Directional Drilling	Vaults	Orick Tower	Total
Segment 1	Temporary	0	0.3	0.15	5.45	0.03	0.11	0.001	0	6.041
	Permanent	0.005	0	0	1.82	0	0.016	0	0	1.839
Segment 2	Temporary	0	0.04	0	0.47	0	0	0.001	0	0.512
	Permanent	0.004	0	0	0.16	0	0	0	0	0.161
Segment 3	Temporary	0	0.08	0	15.22	0	0.039	0.0001	0	15.339
	Permanent	0	0	0	5.07	0	0.006	0	0	5.078
Segment 4	Temporary	0	0	0	7.29	0	0.015	0.0001	0	7.308
	Permanent	0.004	0.05	0	2.43	0	0.002	0	0.5	2.986
Segment 5	Temporary	0	0	0	2.35	0	0.0009	0.0001	0	2.348
	Permanent	0	0	0	0.78	0	0.0001	0	0	0.782
Total All Segments	Temporary	0	0.42	0.15	30.78	0.03	0.16	0.0005	0	31.548
	Permanent	0.013	0.05	0	10.26	0	0.024	0	0.5	10.846

NOTE: *Numbers assume that a 2-foot-wide maintenance area above each trench is a permanent disturbance impact.

SOURCE: Data compiled by Environmental Science Associates in 2020, based on GIS data provided by the Applicant.

In order to minimize any potentially adverse environmental effects from Project construction and operation, the Applicant had proposed numerous measures. These are presented in Table 2-7 at the end of this chapter.

2.6.2 Preconstruction

Before construction, the Applicant would obtain necessary ROWs and easements for parcels not owned or legally managed by the Applicant.¹¹ With the exception of several parcels and fee land that underlies the existing Orleans Tower and surrounding area in Segment 1, the Applicant does not own or manage the land over which the Project would cross. The Orick Tower would likely require less than 0.5 acre of land for the fenced installation. Other “last-mile” facilities are unlikely to require additional land, but if needed, they would be included in requests for easements at the completion of engineering.

2.6.3 Laydown and Staging Areas¹²

Laydown Areas

Laydown areas (places where reels of conduit, fiber optic cable, and other construction materials would be stored) would be required during construction. **Figure 2-9** illustrates the locations of all potential laydown and staging areas that could be used for the Project. Project laydown areas would typically be approximately 250 feet by 250 feet in size, or about 1.4 acres. None of these areas would require grading, vegetation removal, or other site preparation other than the installation of temporary construction fencing (for the laydown areas). All potential laydown areas that could be used by the Project are listed below. No other locations are evaluated in this analysis.

- **Segment 1 (L-1¹³)** is a former mill site that is paved and graveled and fenced. No additional construction would be needed.
- **Segment 2 (L-2)** is a graveled turnout at the intersection of SR 169 and the Martin’s Ferry Bridge that was previously used for construction activities at the bridge. Use of this site would require the installation of temporary construction fencing.
- **Segment 3 (L-3)** is a graveled and gated area at the location of the Wiregrass wireless broadband tower, on Bald Hills Road just above the Yurok Veterans Cemetery. Use of this site would require the installation of temporary construction fencing.
- **Segment 4 (L-4)** is the proposed location of the Orick Tower. If used for laydown, it would be graveled and fenced.
- **Segment 5:**
 - *L-5A* is a previous mill site located at Big Lagoon on GDR land. Portions of the site are fenced, but additional construction fencing would be required.

¹¹ The Applicant owns several parcels in fee that would be crossed by the Project. The Project would also cross trust land, which is either privately owned (by a tribal member) or by a tribe, the title to which is held in trust for the tribe by the federal government.

¹² Laydown and staging area locations would be identified in consultation with land managers/owners such as NPS.

¹³ “L” refers to the locations of the potential laydown areas shown in **Figure 2-9**. Specific details of locations are shown in the PEA.

- *L-5C* is in McKinleyville on the private property of an existing construction, shipping, and trucking company. Equipment and materials may be stored at this site during construction under a lease arrangement.

Specifications for temporary construction fencing would be determined by the construction contractor, but would likely consist of 8-foot-tall cyclone fencing, associated components, and a gate wide enough to admit equipment and large trucks. No electrical power would be needed at either the laydown or staging areas.

Staging Areas

Staging areas (see Figure 2-9 for locations) would be used for temporary equipment storage during construction and would not require fencing. Typically, these are wide turnout areas along roads that have been used by other projects in the past for similar purposes, or for Caltrans maintenance. None of the selected staging areas would require additional grading or ground disturbance for use. The number of previously disturbed turnout areas available is sufficient to cover the Project's staging needs.

2.6.4 Installation of Middle-Mile Cable

Overview

The Project would comprise placement of approximately 104 miles of middle-mile fiber optic cable in either underground or aboveground installations. Existing poles would be used as the preferred option for aboveground installations to the extent feasible. Underground methods would be used where existing poles are not available and installing new poles either would be infeasible or would have adverse environmental impacts. No mature trees would be removed as part of the Project (Karuk Tribe, 2020). Potential methods for installing fiber optic cable are described in more detail below. Table 2-1 presents miles crossed by land ownership per Project segment.

Cable Installation—Overhead Position

Overhead installation would use existing poles where feasible. The poles used would include “joint-use” poles, in which electric (typically wooden) power poles (sub-transmission or distribution voltages) are already shared with one or more communications providers; “power” poles, typically wooden poles with an electric power component at sub-transmission or distribution voltages but no existing use by communications providers; and “communication” poles, installed by one or more communications providers, typically on a shorter pole and without an electric power component. Where there is an existing communications provider, the Applicant would enter into an agreement with that provider to share the communications space on that pole. For power poles without other communications providers, the Applicant would enter into an agreement with the electrical service provider, i.e., PG&E, to establish and use the communication space on those poles.

Segments 1 through 5 would use existing or new distribution poles. In Segment 5, cable would also be hung on existing transmission poles. Using transmission poles provides a more direct

route and allows longer cable spans between poles compared to the less direct route offered by the use of distribution lines, which typically follow roads. Hanging the cable on transmission poles may require using special equipment, such as all-terrain vehicles and bucket trucks that can traverse cross-country over steep terrain. In some instances, installers may climb the poles and install pulleys to allow the cable to be pulled into place from accessible locations, then anchor the cables directly to the poles once tensioned. **Figure 2-10** presents a typical overhead installation.

The text below provides general details regarding the installation of new and existing poles and details of installation methods for water crossings (**Figure 2-11**).

Existing Poles

Where existing poles are available in locations immediately adjacent to an existing road, the Project would generally use joint use poles. As part of the Project, the Applicant would obtain an agreement with PG&E to use poles that do not already have an incumbent communications attachment. Joint-use poles typically have a 13-kilovolt distribution line at the top and a communication cable at a lower anchor point. Project cable would be installed between the PG&E distribution lines and the communications cable, generally 12 inches above the existing communications cable and at least 3 feet below existing power conductors. Where the pole supports only existing telecommunications facilities, Project cable would be installed 12 inches above or below the existing communications cable on those poles. Traffic control would be needed during installation of the overhead fiber optic cable.

Before attaching the Project cable to the pole, other cable attachments may need to be moved to accommodate the new fiber. Specialized contractors, approved by the other communications providers, would be used for this step.

At each pole with an existing anchor, an additional cable may be needed to secure the pole to the ground. The Applicant would determine additional securing components in the field in consultation with PG&E and communication provider engineers. If an agreement is reached with the communication provider, the Project would use an existing anchor eye and no ground disturbance would be required for additional guy anchors. If the communication provider is unable to make those anchors available, an additional anchor would be installed adjacent to the existing anchor by drilling the guy anchor directly into the ground to an average depth of 6 feet.

When the cable has been secured to all the poles, the fiber optic cable itself would be brought to the work area and attached to the strand cable. Where the fiber optic cable would be placed overhead, the fiber would be lashed to a ¼-inch steel cable support strand and the cable would be secured to existing or new utility poles. The overhead fiber may be enclosed in an ultraviolet aerial-rated duct if the area is subject to high rates of vandalism or presents rodent issues. Work on the poles would be conducted from a bucket truck (Figure 2-11). This truck would allow safe access for workers to each pole.

The fiber optic cable would be tensioned and spliced after installation. A splicing box would be placed at the base of the last aerial pole before the cable's connection with the underground portion,

and in three additional locations (two immediately adjacent). These splicing locations would also include a coil of extra fiber optic cable, facilitating any repairs that may be needed in the future.

In strategic locations along the overhead middle-mile installation, loops of additional cable would be attached to “snowshoes,” reels suspended in-line that allow for storage of extra fiber optic cable to make future maintenance and repairs feasible without having to decommission large portions of the system during repairs. After the fiber has been installed, tensioned, secured, and spliced, the area would be returned to preconstruction conditions or as dictated by the terms and conditions of the road management agency’s permit.

New Poles

In locations where existing carriers’ cable placements on existing poles prohibit the addition of another carrier, installation of new poles may be needed. Six new poles would be required at water crossings for the Klamath River and Redwood Creek, with potential additional new poles, if required to replace existing poles during installation. Based on the engineering evaluation of the additional load of a new communications cable, the existing pole may need to be replaced with a stronger pole. The exact locations of potential new pole installations are not known, as the pole owner frequently identifies the requirement to replace poles as formal permission to attach to specific poles is being negotiated. New poles would also be used when crossing sensitive features, such as the Klamath River, and when an existing pole cannot accommodate an additional cable.

No specialized poles requiring foundations or towers are proposed. If new poles are required, these would consist of industry-standard, pressure-treated wooden poles that would be 20–30 feet tall (depending on the span and any obstructions). The Project would only use direct-bury wooden poles, supported by guy wires, if needed. The hole for the pole would be dug using an auger mounted on a truck. A boom truck would lift the pole and install it in the hole. The hole would be backfilled and compacted while the boom truck steadies the pole and holds it vertical. Backfill would depend on existing soil conditions and may include a portion of concrete if necessary. Installation of guy wires, if needed, would be undertaken by attaching the wires to the pole while it is horizontal. Pole ground anchors would be 3–4 feet long and equipped with a corkscrew-like anchoring device, and would be installed by twisting into the ground, either by hand or using a specialized attachment on a boom truck. Where the ground is rocky or consists of competent bedrock, rock anchors may be used.

For poles with existing communications cable(s) already attached, the pole location would be prepared for cable installation. Preparation would likely include limited vegetation trimming to accommodate the stringing of the cable. This could involve moving one or more incumbent providers down on the pole so that the new cable would be at the top of the communications space on a joint-use pole, as is often required by the incumbent communications providers. Installation would involve installing attachments, strand, guy wires, and anchors in accordance with specifications; stringing the cable between poles; lifting it up to attach to the poles; then tensioning it correctly before final attachments are made. Installation would also include attaching additional guy wires to the top of the pole and to either existing or new anchors.

Cable Installation—Underground Position

The Project would install cable underground in locations where no overhead poles are available. Underground installations would use a variety of methods, as described in more detail below. Two conduits would be installed underground to permit future addition of a second fiber optic cable without new ground disturbance. The final selection of an underground method would depend on ground conditions and the requirements of the responsible agencies.

Generally, wherever fiber optic cable is installed underground, cable markers would be installed along the route to identify underground fiber access locations (or vaults), and to indicate the presence of underground cables in the event of any future excavation. Vaults are typically located a mile apart to allow for routine splicing of fiber optic cable, except where they are installed more frequently at change of installation method (from trenching to directional drilling, for example, whether to go under a road culvert or under the road). Markers would typically be white plastic cylinders, 3.5 inches in diameter and 42 inches tall, with orange tops. Within RNP outside of the Lyons Ranches Historic District and in visually sensitive areas, other types of markers would be used, such as wooden 4-inch by 4-inch posts, typically 24–36 inches above ground, that are less visually intrusive¹⁴.

Above-ground markers would not be used on the National Register of Historic Places–listed Lyons Ranches Historic District in RNP. Instead, a detection system would be installed in new underground splice vaults to allow identification of the cable before any future ground excavation.

Trenching

Trenching is the preferred method for installing cable underground and would be the Project’s most commonly used method of underground installation (Figure 2-11). Trenches would be located in existing areas of disturbance within road shoulders and/or within existing road drainage ditches. Trenching would be undertaken using a specialized trenching machine, with an oval or circular blade with a chain of cutting teeth on small buckets. The trenching device would be lowered into a ditch or directly into the soil to cut a trench approximately 6–12 inches wide and 36 inches deep. This would result in a 1- to 2-foot-wide disturbance area at the bottom of the ditch. Where terrain is more challenging or there is a substantial amount of rock, trenching would be slower and could require the use of specialized digging equipment. Where side slopes are steep or the working area is otherwise limited, a backhoe or excavator with a narrow bucket would be used.

Following preparation of the trench, two conduits would be placed in the ditch and a single fiber optic cable would be placed in one of the conduits. A locating tape (detectable by commercial utility location services) would be installed over the conduit and the trench would be backfilled and compacted, using a tractor with a front bucket and a backhoe.

Some removal of vegetation and rock may be required, depending on the frequency of ditch maintenance routinely performed. No other vegetation removal is proposed as part of the Project’s underground installation. Should dewatering be needed, a vacuum truck would remove

¹⁴ The Applicant would consult with NPS prior to construction with respect to location and types of acceptable markers.

the water from the trench, store the water in its tank, then dispose of the water at an approved facility. Trench dewatering would be undertaken in compliance with the specifications of Caltrans Best Management Practice (BMP) NS-2 and the *Field Guide to Construction Site Dewatering* (Caltrans, 2014, 2017). The trench would be backfilled with material removed during trenching or with locally sourced aggregate materials and would be compacted to the required specifications. While accommodating appropriate drainage conditions, the road shoulders would be restored to preconstruction condition as required by the regulating road agency.

The last 6 miles of cable installed for Segment 2 would include two substantial areas of underground installation. Independently of the Project, PG&E recently installed an additional underground conduit and an additional vault at each end of the conduit (Karuk Tribe, 2020) that would be used to accommodate the Project cable. As a result, only minimal ground disturbance would occur at these locations as part of the Project.

Pavement Saw-Cutting

Wherever possible, the Project would be installed in road shoulders or roadside ditches. In locations where this would be infeasible (e.g., where the road is paved to the guardrail, the top edge of a steep fill slope, or the edge of a full-bench cut in rock and cliffs, and either no inside ditch is available or the inside ditch is in an active slide zone), pavement saw-cutting would be used (Figure 2-11). This method would be used only where other installation methods or locations are infeasible or to avoid impacts on cultural resources. Saw-cutting would be used only for parallel encroachments, and not for crossing roads, unless specifically permitted by the road manager as specified in Table 2-1.

Where the conduits must be installed in pavement, the pavement would be cut as close to the edge as possible, as permitted by the road manager. This work would be completed using a concrete saw attached to a backhoe operating from the road, which would open a trench about 12 inches wide to below the saw cut to 36 inches, or as specified by the road manager. Conduits and warning tape would then be installed and the trench would be backfilled. Compaction standards¹⁵ would be met unless otherwise directed by the local road owner. Specialized paving equipment would be used to restore the pavement by patching the pavement with asphalt and sealing it to the existing asphalt, or by pouring concrete to match the existing road where indicated.

Rock Sawing

Where bedrock is present at or near the road shoulder surface, the use of rock saws may be needed. Rock saws are specialized saws that are similar to those used for cutting pavement, but specialized for harder rock types. They are attached to a backhoe and used to cut a narrow trench in the rock. The trench would be cut to the shallowest depth permitted by the road manager, typically 18 inches deep. Conduits and warning tape would then be installed, then the trench would be backfilled.

¹⁵ Compaction standards would adhere to the CAL216 Standard or as directed by the road owner (Caltrans, 2018).

Horizontal Directional Drilling

Where the Project would install cable in road ditches, the intent would be to use the ditch on the uphill side of the road. Roads in steep country frequently switch back and forth through tight curves to facilitate drainage. To avoid multiple saw cuts across the road, the Project would use directional drilling to shift from one side of the road to another. Horizontal directional drilling (HDD) would also be used to avoid specific infrastructure, such as culverts and waterlines, and sensitive resources, such as old-growth tree roots and known archaeological sites (where the approximate depth to the resource has been identified).

HDD requires the use of a specialized drill rig. In the one residential area where HDD would be required (in the vicinity of Railroad Avenue and Central Avenue in McKinleyville), the drill rig would be located at least 100 feet from any residences. The drill rig would be located behind and set back from the infrastructure under which drilling would occur. The setback distance from the infrastructure would be roughly 5 feet horizontal for every foot of vertical depth needed. Using a drill bit selected based on the soil and other substrate, the rig would drill at an angle in the road shoulder, under the infrastructure (e.g., culvert, road, existing underground utilities), and back out the other side. To lubricate the drill bit, drilling “mud” would be circulated into and out of the drilling hole. This mud is made of naturally occurring bentonite clay and water with non-petroleum emulsifiers and other lubricant compounds. It lubricates, seals the hole, and provides a medium for the removal of cuttings.

HDD requires an entry and an exit pit, but because these are the only points of ground disturbance, it generally results in much less disturbance than other underground methods. Cable and conduit reels would be placed at the endpoint of the drill. When the drilling machine has reamed out the drill hole to the desired diameter (3 inches), the two conduits, one with fiber optic cable pre-installed, would be pulled back through the drill hole to the drilling machine. Upon completion of the conduit installation, the directional drilling machine would be moved and a splicing vault installed. In the vault at each side of the directional drill, the fiber optic cable would be spliced to the cable already installed on either side of the drill area. An underground splice box or “vault” would require a 3-foot by 4-foot hole approximately 2 feet deep and would carry a traffic-proof cover measuring 2 feet by 3 feet. These would be generally located out of the travel way in the road shoulder¹⁶.

Barriers such as straw bales, sediment fences, and silt socks would be used around bore sites and equipment to contain mud and lubricants during drilling. The disposal site would likely use a mud pit to drain the mud and allow the water to evaporate. The resultant nontoxic clay residue would be added to other soil materials at the disposal site. A vacuum truck would be available during all HDD operations to pick up routine drilling fluid and for any spillage or “frac-out”¹⁷ of drilling fluid. The most direct method of avoiding frac-out is to constantly monitor the drilling equipment’s pressure gauges and ensure that they working properly during operation. An additional measure for detecting a frac-out is to monitor the drilling corridor during drilling for any signs of mud, water, or ground sinkage along the corridor. Directional drilling would not be used to cross under perennial

¹⁶ The Applicant would consult with NPS as to the location, appearance and type of vault coverings in RNP.

¹⁷ A *frac-out* is the unintentional return of drilling fluids to the surface during HDD. A frac-out occurs when the down-hole mud pressure exceeds the overburden pressure (i.e., shallow or loose sections of the bore) or the fluid finds a preferential seepage pathway (such as fault lines and fractures, infrastructure, or loose material).

or intermittent streambeds unless they are contained in a culvert, thus minimizing any chance that drilling mud could enter the streambed. Because this effort would be conducted in road shoulders that are routinely graded to remove vegetation, restoration would be limited to re-grading road shoulders to preconstruction contours and conditions.

The entrance and exit pits would be backfilled with the native material originally removed to form them, and compacted around the vaults. Any surplus native material would be hauled to a Caltrans-listed or Humboldt County–approved disposal site. Excavated soils would not contain lubricants. Wet soils containing bentonite lubricant would be hauled in vacuum trucks from drill pits to approved disposal sites. The exact locations of entrance and exit pits would not be known until construction; however, wherever possible, sites used would be previously disturbed areas.

An estimated maximum of 67 pairs of exit and entrance pits, or 134 pits total, would be needed for the directional drills planned for the Project. At 3.7 cubic yards (cy) per pit, the total excavation would be 496 cy. About 1.77 cy in each case would be displaced by a hand hole box¹⁸, requiring off-site disposal of about 237 cy, with 259 cy to be used as backfill.

Water Crossings

The Project alignment would need to cross numerous water features, including the Klamath River at both Orleans (680-foot crossing; Figure 2-4) and Martin’s Ferry (705-foot crossing) and Redwood Creek at Orick (455-foot crossing). The Project’s water crossings would be as follows:

- Segment 1 would cross multiple tributaries of the lower Klamath River—Camp, Crawford, Ullathorne, Slate, Bluff, Aikens, Joe Marine, Cavanaugh, and Santa Rosa Creeks—and several other unnamed streams. The spur to CalTrans and to the Karuk Tribe trust property would cross the Klamath River using new poles.
- Segment 2 would cross multiple tributaries of the lower Klamath River—Muddy, Weitchpec, Ben’s, Burrill, Rube Ranch, Miners, Coon, Mawah, Mureep, Devil, Cappell, and Pecwan Creeks—in an overhead alignment that would use existing utility poles or bridge hangs. The Tulley Creek spur would cross the Klamath River on new poles adjacent to Martin’s Ferry Bridge.
- Segment 3 would not cross any streams.
- Segment 4 would include a bridge hang across Prairie Creek and an overhead crossing of Redwood Creek using new poles.
- Segment 5 would cross many perennial and intermittent streams along the existing PG&E ROW where it would cross GDR lands, including Luffenholtz Creek, which provides the municipal water supply for the town of Trinidad. Nearly all streams in Segment 5 would be crossed overhead on the existing PG&E poles or on existing joint-use poles along Murray and Central Avenues in McKinleyville. Along Murray Road, where two small streams are contained in culverts, the fiber optic cable would be installed beneath the culverts using directional drilling.

¹⁸ In an underground electrical system, a hand hole box is a shallow form of manhole giving access to a top row of ducts.

Whenever possible, existing poles would be used to cross watercourses. Where these are not available, the Project would use the methods described below.

Installing new poles and an overhead cable. This method would be used at locations where adequate space is available adjacent to the watercourse to allow pole installation. Where new poles are required for installation near a watercourse, a specialized truck would use an auger to drill a hole far enough back from the side of the watercourse (minimum 100 feet from the high-water mark) to avoid disturbing the watercourse or any riparian vegetation. These distances are described in detail in Section 4.10. Approximately six new poles would be installed to facilitate the Project's water crossings at three locations: Two new poles each would be installed for the Klamath River crossings at Orleans (Segment 1) and Martin's Ferry (Segment 2), and two poles would be installed for the Redwood Creek crossing (Segment 4). All three proposed water crossings would be immediately adjacent to existing Frontier Communications crossings.

Where new poles would be used to cross a sensitive feature such as a stream in an otherwise underground installation, the fiber from the underground portion would terminate near the pole installed on each side of the crossing. After installation of the poles, the fiber optic cable would be strung and tensioned on the poles. The specialized fiber-optic-cable-splicing team would then complete the connections between the overhead and underground cables. These connections could be either direct or secured in vaults near the bottom of the poles on each side of the crossing.

Hanging the cable on an existing bridge over the watercourse. The cable could be installed over watercourses by use of a bridge hang (Figure 2-11). Conduit will be attached as specified by the bridge owner, but typically by drilling into the bridge structure just enough to attach anchor bolts or hooks to which the conduit can then be secured.

Segment 2 would include the use of an existing bridge hang on the Pecwan Creek Bridge. PG&E installed a separate conduit on this bridge (permitted separately and not part of the Project). PG&E also constructed an underground conduit for its power line where the bridge hang alignment reaches adjacent ground. This includes an extra underground conduit that would be used to accommodate the Project's fiber optic cable. Thus, the Project would result in only minimal ground disturbance at this bridge location, because the Project would use existing PG&E vaults at each end of the extra underground and bridge hang conduits (Karuk Tribe, 2020).

Installing the cable and conduits via directional drilling. This method would be used to minimize the risk of impacts on key resources and infrastructure, e.g., to cross under culverts and avoid wetlands present in the road shoulder. In general, to avoid potential water quality impacts, this method would not be used to cross under perennial streams that are not contained in a culvert.

2.6.5 Orick Tower

Construction of the Orick Tower would begin with foundation preparation and installation. Two foundations would be required: one to support the tower and one to support the hut, propane tank, and generator. The propane tank and generator would be separated by at least 10 feet and could be placed on separate pads, depending on the final Project design. The tower foundation would be excavated 4 feet below grade and would consist of a rectangular area of concrete measuring 15 feet by 15 feet by

1.5 feet. It would be 1.5 feet high and equipped with three piers, each 2.5 feet in diameter and 3 feet high. Each pier would extend 0.5 foot above grade and would support one of the tower legs. The hut foundation would be 1.5 feet deep with a 1-foot perimeter and a 0.5-foot steel-reinforced concrete pad with pre-installed bolts that would fit the pre-drilled holes in the hut foundation.

Once the foundations are in place, the tower components would be delivered by truck. The tower would be assembled on-site. The tower would be a self-supporting, 90-foot-tall galvanized steel lattice tower with three legs. The tower components would be installed into three 30-foot segments. A telescoping, rubber-tired crane would be brought in to install and hold the tower components while the specialty crew with climbing and safety gear bolts the three segments together. A climbing safety system would be installed on the tower for subsequent maintenance and antenna installation needs. The Orick Tower would require construction of a poured concrete foundation requiring approximately 10 cy of concrete, which would be brought to the site (Karuk Tribe, 2020). The use of blasting or the need for traffic control during construction is not anticipated.

Following installation of the hut, an ice bridge would be constructed and installed between the hut and the tower. This bridge would facilitate the placement of communications lines below the bridge to protect the lines from high winds, heavy rains, snow, and ice accumulations. The 18-inch-wide ice bridge would be installed approximately 8 feet above ground on an independent, grounded, galvanized pipe structure to allow free pedestrian movement below it.

Total construction ground disturbance for the Orick Tower, including the pad for the crane, access road improvements, and distribution power installation, would be less than 0.5 acre. The permanent footprint would be the area within the fence (375 square feet) plus parking and access road maintenance (about 0.1 acre total).

2.6.6 Generator Upgrades at Existing Yurok Wireless Towers

For the Yurok wireless towers to continue to function, several upgrades¹⁹ would be required as described below.

The Wiregrass Tower, located on Yurok Trust land, would require a 20-foot extension of the existing tower and a replacement generator. Installation of the guy wires would require three holes, each of which would require the excavation of approximately 8 cubic feet of earth. Work at the Miners Creek Tower, located on Yurok Trust land, would require replacement of the equipment container used to house the radio/switching/electrical equipment. The new equipment container would sit on the same footprint as the existing container and no other ground disturbance would be needed. The McKinnon Hill Tower, located on Yurok Trust land, would require the installation of a redundant power system. No ground disturbance would be required. The Weitchpec Tower would require replacement of the existing equipment container. The replacement process would use the existing footprint and no additional ground disturbance would be required. In addition to these upgrades to the wireless towers, the Wautec Firehouse would require the installation of a backup generator with automatic transfer switch. No ground disturbance would occur at this site.

¹⁹ Note: as of June 2022, this work was funded through the CARES Act and has been substantially completed.

2.6.7 Yurok Signal Connection (Orleans Mountain and Antenna Ridge)

Construction of the Yurok signal connection would require limited installation activities on Orleans Mountain in an existing radio hut. An additional new antenna and radio would also be installed on the existing Orleans Mountain tower. The signal connection would be installed in the existing hut in the existing U.S. Forest Service antenna tower and vault (**Figures 2-12, 2-13**). The site would be accessed via the existing Orleans Mountain Lookout Road and no ground disturbance or other construction would occur at this location.

The Yurok signal connection would also require the clearing of old equipment and installation of new equipment on Antenna Ridge (**Figure 2-14**). Construction of the repeater system would require the installation of a small solar-powered relay station on Antenna Ridge (**Figures 2-15, 2-16**). This new relay station would be located at the site of the existing Orleans Community Service Club television antenna relay station, which is no longer used. The Orleans Community Service Club station would be removed as part of the Project. The relay station would comprise a 30-foot lattice tower located on the ridge with two 3-foot antennae mounted on the top of the tower (Figure 2-13). A solar array and a bank of batteries would also be installed. The batteries and radios would be enclosed in a weatherproof 6-foot by 6-foot, approximately 8-foot-tall hut, and the solar panels would be mounted on the roof (Figure 2-13). A security fence would be installed for public safety and to reduce the potential for vandalism or theft.

Generally, no vehicles or other wheeled or tracked equipment would access the site during construction. Construction equipment would be carried to the site by hand from the nearby Orleans Mountain Road. A generator or truck-mounted air compressor could power some equipment and a gas-powered hand auger would drill the holes needed to mount the solar array and antenna pole. A gas-powered auger could be used to install the tower's foundation.

2.6.8 Connection with Service Providers in Orleans and McKinleyville

In Orleans, the Project would connect to Áan Chúuphan's existing fiber optic system at the equipment rack in the Karuk Tribal Council Chambers Building. Áan Chúuphan's fiber network extends north of Orleans and connects with Siskiyou Telephone. No ground disturbance would occur, nor would the office's appearance change. In McKinleyville, the fiber would be installed on existing PG&E transmission lines to Murray Road, then would extend (both underground and on existing distribution poles) along Murray Road and Central Avenue into McKinleyville to the AT&T central office on Railroad Drive.

2.6.9 Last-Mile Components

Last-mile installations would typically be completed by a small crew of workers (a maximum of five). The drop installation would begin at an access location in the fiber ROW and extend a fiber drop cable to the premise location. Using a small trencher, the fiber cable drop would be installed underground, at a minimum depth of 12 inches to the premise, and the trench would be

backfilled. Once at the premise, the installer would complete the termination of the fiber into fiber terminal equipment mounted on the outside of the building or inside the customer's premise.

2.6.10 Water and Wastewater

The Project would use water to support underground installation, dust control, and directional drilling, and for concrete construction at the Orick Tower site. Water used for construction would be purchased from municipal sources. An estimated 6,000 gallons of water would be required for construction of the Orick Tower (including for dust control). Ready-to-pour concrete would be delivered from a commercial facility for foundation development. An estimated 200 gallons of water would be required for foundation construction at Antenna Ridge. This water would be delivered to a location near the site via pickup truck. Concrete would be mixed in small batches by hand on-site. Construction-related water use is estimated to be 275,342 gallons for the entire Project (Karuk Tribe, 2020).

2.6.11 Access

The Project would use existing roads, and no new permanent or temporary access roads would be needed, other than temporary 100-foot paths needed for the installation of new poles at the Klamath River crossings in Orleans and Martin's Ferry and at the Redwood Creek crossing in Orick. No helicopters would be used for the Project.

As noted above, a temporary overland access path may be required to construct the newly proposed aerial fiber cable river crossings at both Orleans and Martin's Ferry and Redwood Creek. Each temporary path would provide access to place new poles, new aerial hardware, and new aerial fiber cable across the Klamath River and Redwood Creek. No grading activities would be needed for the paths and any disturbance from vehicle movements would be restored as required by the landowner or land manager.

2.6.12 Soil and Waste

During construction activities, some waste and surplus soil would be generated by activities such as tower installation and by general construction activities (i.e., personal waste generated by workers and personnel). This type of waste is anticipated to be relatively minimal. The largest source of solid waste is anticipated to be excess soil and excavation from structure foundations and trenching associated with the underground installations.

Project construction is anticipated to result in approximately 237 cy of excess soil from HDD, which would be disposed of at an approved disposal facility off-site. Other construction activities such as trenching would result in up to 30 cy of material per mile of ditch that cannot be returned to the trench and used as backfill. Up to 1,440 cy of excavated materials (including excess soil from trenching) would need to be disposed of off-site (Karuk Tribe, 2020). Dewatering is not expected to be required during construction, but should it become necessary at any point, pump trucks and baker tanks (large water storage tanks) would be used in accordance with relevant federal, state, and local requirements.

During construction, should soil that is stained, odorous, or otherwise suspect be encountered, the Applicant would sample in-place, test, profile, and transport this material to an appropriately permitted disposal facility in accordance with all federal, state, and local laws and regulations.

2.6.13 Construction Personnel

Approximately 24 construction workers per day would be required for Project construction at its peak. The peak of construction would occur at around one month into the construction process. The construction contractor would be responsible for hiring and housing workers. The Applicant expects that workers would be housed in Willow Creek for construction of Segments 1, 2, and 3, and in Orick or McKinleyville for construction of Segments 4 and 5. The average worker commute to Segments 1, 2, and 3 would be 37 miles, while the average commutes to Segments 4 and 5 would be 11 miles and 36 miles, respectively (Karuk Tribe, 2020).

2.6.14 Construction Equipment

Tables 2-3 and **2-4** summarizes the estimated labor and equipment for the Project. Project construction would occur over a period of approximately 19 months; however, the Project would use heavy-duty construction equipment only over a 12-month period associated with fiber installation and construction of the Orick Tower. Construction activities for the Yurok signal connection, connection to service providers, and last-mile service installations would not require the use of heavy-duty construction equipment. **Table 2-5** provides the estimated total and average daily hours of heavy-duty equipment use required to construct the Project. The average hours per day were estimated by dividing the total equipment hours by the number of heavy-duty equipment workdays (i.e., 264 workdays over 12 months).

Construction of the Orick Tower would be undertaken over a two- to three-week period. The construction of two (or more) foundations would require a crew of three to assemble and install the rebar, and to work with the concrete trucks to bring in the required volume of concrete to pour columns for the leg foundations and pads. **Table 2-4** lists the estimated number of crew members and equipment required for construction of the Orick Tower.

**TABLE 2-3
FIBER OPTIC CABLE INSTALLATION CREW AND EQUIPMENT NEEDS**

Crew Type	Peak # Crews	Crew Composition	Equipment Type	Motor Vehicles
Traffic Control	2	Lead Worker (1) Laborers (2)	None	4x4 Pickup (1)
Overhead Installation on Existing Poles	2	Lead Worker (1) Equipment Operator (2) Laborers (4)	Bucket Truck (2) Equipment Trailer (1)	4x4 Pickup (1) 4x4 Crew (2)
Overhead Installation on Transmission Poles	2	Lead Worker (1) Equipment Operator (2) Laborers (4)	All-Terrain Bucket Truck (2) Equipment Trailer (1) Utility ATV (2) ATV Trailer (2)	4x4 Pickup (1) 4x4 Crew (2)
Overhead Installation on New Poles	2	Lead Worker (1) Equipment Operator (2) Laborers (4)	Bucket Truck (2) Backhoe (1) Equipment Trailer (1)	4x4 Pickup (1) 4x4 Crew (2)
Trenching	2	Lead Worker (1) Equipment Operator (2) Laborers (4)	Trencher (1) Backhoe (1) Conduit Reel Trailer (1) Equipment Trailer (1)	4x4 Pickup (1) 4x4 Crew (2) Water Truck (shared)
Saw Cutting in Pavement	2	Equipment Operator (2) Laborers (4)	Trencher (1) Backhoe (1) Asphalt Saw (1) Conduit Reel Trailer (1) Equipment Trailer (1)	4x4 Pickup (1) 4x4 Crew (2) Water Truck (shared)
Rock Cutting	2	Equipment Operator (2) Laborers (4)	Rock Saw Trencher (1) Backhoe (1) Conduit Reel Trailer (1) Equipment Trailer (1)	4x4 Pickup (1) 4x4 Crew (2) Water Truck (shared)
Directional Drilling	2	Lead Worker (1) Equipment Operator (1) Laborers (2)	Directional Drill (1) Backhoe (1) Vacuum Excavating Equipment (1) Conduit Reel Trailer (1) Equipment Trailer (1)	4x4 Pickup (1) 4x4 Crew (2) Water Truck (1)
Bridge Hang	2	Lead Worker (1) Equipment Operator (2) Laborers (4)	Knuckle Man-Lifts (2) Equipment Trailer (2)	4x4 Pickup (1) 4x4 Crew (2)
Vault Placement	2	Equipment Operator (1) Laborers (2)	Backhoe (1) Equipment Trailer (1)	4x4 Crew (1)
Cable Placement	2	Lead Worker (1) Equipment Operator (3) Laborers (9)	Cable Pulling Equipment (3) Air Compressor (1) Cable Reel Trailer (1) Equipment Trailer (1)	4x4 Pickup (1) 4x4 Crew (3)
Cable Splicing	2	Splicer (2)	Splicing Trailer (1)	4x4 Pickup (1)
Cable Marker Installation	2	Laborers (4)	Equipment Trailer (1)	4x4 Crew (1)

NOTE: ATV = all-terrain vehicle

SOURCE: Data compiled by Environmental Science Associates in 2021

**TABLE 2-4
ORICK TOWER CONSTRUCTION CREW AND EQUIPMENT NEEDS**

Crew Type	Peak # Crews	Crew Composition	Equipment Type	Motor Vehicles
Foundation	1	Lead Worker (1) Equipment Operator (2) Laborers (6)	Backhoe (1) Equipment Trailer (1)	4x4 Pickup (1) 4x4 Crew (2) Concrete Truck
Tower Installation	1	Lead Worker (1) Equipment Operator (2) Laborers (6)	Erector Crane (1) Equipment Trailer (1)	4x4 Pickup (1) 4x4 Crew (2)
Hut, Generator, Propane Tank Installation	1	Lead Worker (1) Equipment Operator (2) Laborers (6)	Backhoe (1)	4x4 Pickup (1) 4x4 Crew (2) Concrete Truck
Fencing Installation	1	Lead Worker (1) Laborers (4)	Equipment Trailer (1) Small Concrete Mixer (1)	4x4 Pickup (1) 4x4 Crew (2)
Ice Bridge Installation	2	Lead Worker (1) Laborer (1)	Handheld Power Tools	4x4 Pickup (1)

SOURCE: Data compiled by Environmental Science Associates in 2021

**TABLE 2-5
PROJECT TOTAL AND AVERAGE DAILY EQUIPMENT USE HOURS**

Equipment Type	Horsepower	Total Hours	Average Hours per Day
Aerial Lifts	25	1,376	5.21
Air Compressors	15	196	0.74
Bore-Drill Rigs	120	464	1.76
Rock Saw Trencher	25	288	1.09
Cranes	175	20	0.08
Dumpers/Tenders/Water Trucks	25	3,327	12.60
On-Highway Heavy-Duty Diesel Trucks	500	286	1.08
Off-Highway Trucks	175	232	0.88
Roller Compactors	81	264	1.00
Backhoes	95	3,134	11.87
Trenchers	120	2,672	10.12

SOURCE: Karuk Tribe, 2020

2.6.15 Construction Traffic

Up to 13 total daily round trips (26 one-way trips) by worker and support staff vehicles to and from various staging yards and work sites would occur each workday. The number of truck trips to transport excavated materials to storage yards and/or disposal facilities would vary based on the trenching rate, the area excavated to install vaults, and proximity of the storage yards/disposal facilities to the ROW. Additional truck trips would be required to transport materials, such as fiber, concrete, and water, to the various Project work areas. Up to eight daily round trips (16 one-way trips) by medium- and heavy-duty trucks would be required during construction.

Where Project construction would occur alongside or within roadways (about half the length), appropriate traffic control measures would be required to ensure public and worker safety. These measures would include the installation of temporary signage to warn travelers of construction, even in areas where work would be conducted in roadside shoulders. Where equipment must occupy part of a lane, some lane closures would be required. Flaggers would be used for lane closures to facilitate traveler safety. Pilot cars are not anticipated to be required during Project construction. Traffic control would be conducted from a standard pickup that would carry and deploy signs, cones, and flagging stations, and would be staffed by up to three people to set signs and conduct flagging operations, as needed. In areas where road width is inadequate to allow trenching and other construction equipment to operate off the travel way, a traffic plan would be filed with the appropriate road agency and traffic controls would be used to protect construction workers and the public.

2.6.16 Schedule

It is anticipated that construction would begin in autumn 2022 (see **Table 2-6**). Construction is less likely from December through February at higher elevations, given the high likelihood of the presence of rockslides and snow in the Project Area, though may be conducted in areas with limited access due to wildlife constraints and tourism considerations. In areas in RNP where the NPA is undertaking prescribed fire management activities, the Applicant would coordinate with NPS to avoid construction in areas where prescribed fire is planned. Because of seasonal constraints to construction, during periods of active construction crews would work seven days a week between 6 a.m. and 6 p.m. in locations more than one mile from a residence or school (Karuk Tribe, 2020). Construction hours may be more limited near schools or where otherwise limited by permitting agencies. Construction would pause as needed to allow traffic to pass on single-lane roads and traffic control measures would be used on two-lane roads to allow equipment movement.

**Table 2-6
ESTIMATED CONSTRUCTION SCHEDULE**

Construction Component	2022					2023										2024												
	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	
Fiber Installation			Dark Gray	Dark Gray				Gray	Gray	Gray	Gray	Gray	Gray	Dark Gray	Dark Gray	Dark Gray				Gray	Gray	Gray	Gray	Gray	Gray			
Orick Tower Construction														Dark Gray	Dark Gray													
Yurok Signal Connection														Dark Gray	Dark Gray													
Connection to Service Providers																											Dark Gray	Dark Gray
Last-Mile Service Installation																									Dark Gray	Dark Gray	Dark Gray	Dark Gray

Key: **Dark Gray** = construction without seasonal restrictions; **Gray** = seasonal restrictions may be in place for at least part of the route.

Source: Karuk Tribe, 2022

2.7 Project Operation and Maintenance

Once installed and operational, the Project would require limited routine maintenance consisting of visual inspections of system components, periodic operation of backup generators, and annual electrical checks on the switches and other components.

The greatest hazard to system operation would be damage to overhead components from natural events such as storms or fires, and damage to the underground components by inadvertent exposure, landslides, or damage. A critical element of the Project design is to assure that the Project is generally accessible by vehicle so that the specialized fiber optic cable welding required for emergency repairs can be conducted in or from a specialized trailer or truck where feasible. Major repairs to the installation could require the use of a crane, which would be brought to site and operated according to the direction of the relevant road manager.

Should the fiber optic cable be severed or damaged, a repair crew would be immediately dispatched to locate and repair the damage. If the fiber optic cable is overhead, bucket trucks would be needed to allow the workers to lower the line to the welding trailer or truck, repair it, and re-suspend it from the pole. If the cable is damaged in the underground installation, it would be dug up several feet on each side of the damaged section, the damaged section would be repaired or replaced and re-welded to the original cable, and the cable would be returned to the conduit and re-buried. The planned installation of extra cable in vaults and in overhead snowshoes would facilitate emergency repairs, allowing the cable to be extracted, repaired, and replaced with minimal disturbance.

During operations, all replacement generators and power sources would operate similarly, but more efficiently than under existing conditions. The one new generator that would be installed at the proposed Orick Tower would run on propane via a 250-gallon propane tank and would consume slightly less than 2 gallons per hour under full load. Generator maintenance would be set to run the unit 12 minutes per week to maintain all elements of the engine in a fully lubricated condition and would facilitate preparedness in the event of a power outage. The propane tank could be refilled from one of several local vendors as needed.

2.8 Applicant Proposed Measures

In addition to the impact avoidance and minimization measures included in the Project design, **Table 2-7** identifies the Project's Applicant Proposed Measures (APMs).

**TABLE 2-7
APPLICANT PROPOSED MEASURES**

APM	Measure Description
GEN-1	Environmental Compliance Monitors hired by the Tribe will monitor construction activities and will report to the Tribe and to the agencies regarding construction compliance with permit terms and conditions. Monitoring activities will be structured in accordance with an Environmental Compliance Management Plan, developed by the Tribe and approved by the lead state and federal agencies prior to construction.
GEN-2	Forest Plan Standards and Guidelines (as amended) will apply on NFS lands. Ground-disturbing activities will comply with all Agency-wide, regional, and state BMPs.
GEN-3	RNP policies and regulations will apply within the RNP. Ground-disturbing activities will comply with listed seasonal constraints and other requirements.
GEN-4	As part of the Karuk Tribe's environmental compliance commitment, the Construction Contractor(s) will be contractually bound to comply with all laws, regulations, and permit requirements, including the mitigation measures and other specific stipulations and methods that are developed as part of the NEPA/CEQA process.
GEN-5	Directional drilling will be used where needed and approved to avoid impacts to water, biological, and cultural resources.
GEN-6	Workers will be encouraged to carpool from housing to the work site each day.
GEN-7	A list and map of available and analyzed laydown and staging areas was provided in this document. If the construction contractor wishes to utilize other laydown areas or staging areas, it is up to the contractor to show to the satisfaction of agencies with jurisdiction prior to their use during construction that those areas provide similar or less disturbance than those shown in this document.
GEN-8	The Construction Contractor will be required to develop and implement a Health and Safety Plan.
GEN-9	The Construction Contractor will be required to develop and implement a Worker Environmental Awareness Program (WEAP).
GEN-10	At least one portable toilet and hand-washing station will be provided per crew.
SOIL-1	Disturbance of soils, rock and vegetation removal will be limited to the minimum area necessary for access and construction. There will be no removal of any oak trees or rock outcrops.
WEED-1	Project personnel and their contractors will be trained on noxious and invasive weed identification to facilitate avoidance of infestations where possible or identification of new infestations.
WEED-2	Gravel and other materials used during fiber optic cable installation on federally managed lands will come from certified weed-free sources.
WEED-3	Project vehicles will arrive at the job site clean of all soil and herbaceous material. The Construction Contractor will ensure vehicles and equipment are free of soil and debris capable of transporting noxious weed seeds, roots, or rhizomes before the vehicles and equipment access the Project.
REC-1	Final Cleanup: Final cleanup will ensure that all construction areas are free of any construction debris including, but not limited to: assembly scrap metals, oil or other petroleum-based liquids, construction wood debris, and worker-generated litter. Permanent erosion control devices will be left in place.
WET-1	Wetland delineations will be performed/updated prior to construction to support CWA Section 404 permitting and to minimize Project impacts. The delineation will identify both wetland and non-wetland waters of the United States that will be affected by the Project. The delineation will also provide sufficient information to support California permitting and will include delineation of wetland and non-wetland waters of the State of California.
WET-2	Where impacts on wetlands are not avoidable, site-specific crossing plans and measures to mitigate impacts will be submitted to the appropriate regulatory agency, as well as the land managing agency. The Karuk Tribe will obtain all necessary permits prior to discharging dredged or fill material to waters of the United States and state.
WET-3	If trench dewatering is needed, it will be completed per the CalTrans BMP NS-2 specifications and Field Guide to Construction Site Dewatering.
BIO-1	If construction will occur during nesting season for migratory birds (16 U.S.C sec.703-712, typically March–July) each year, a qualified biologist will conduct a preconstruction survey for nesting birds where vegetation removal is planned (e.g., plowing, trenching, establishment of directional drilling entry and exit pits, and new pole installation). If no nests are encountered, vegetation removal may proceed. If a nest is found, that vegetation may not be removed until a biologist has determined that the nest is unoccupied, has failed, or the young have fledged.

**TABLE 2-7 (CONTINUED)
APPLICANT PROPOSED MEASURES**

APM	Measure Description
BIO-2	Seasonal restrictions for construction in old-growth forests in RNP, as specified by NPS regulations and policy, will be followed. Seasonal restrictions for construction in GDR lands will follow GDR policies and agreements.
BIO-3	CNDDDB data from 2021 show that there are no mapped NSO nests within 0.25-mile of the Project centerline. Available CNDDDB data from the breeding season prior to construction would be reviewed to assure that there are no new NSO nests within 0.25-mile of the Project centerline. If a new NSO nest is recorded within 0.25-mile of the Project centerline, no construction would be allowed within 0.25-mile of the nest between February 1 and August 1, or until a qualified biologist has determined that the young are fledged, the nest abandoned, or the nest failed.
BIO-4	Directional drilling will be used in areas of old-growth redwood roots (Segment 4, Bald Hills Road) to avoid impacts to the trees. The Applicant will consult with NPS to determine the need for hand excavation to prevent damage to tree root systems.
BIO-5	Where bridge hangs are planned, a preconstruction survey for listed species of bats will occur. If a maternal colony of a listed bat is found, construction will be deferred until the young have been weaned.
CR-1	An archeologist meeting the Secretary of the Interior’s Professional Qualifications Standards for Archaeology with expertise in California archaeology (qualified archaeologist) will perform or direct all cultural resources work with trained assistants.
CR-2	<p>Prior to any ground-disturbing activities, a qualified archaeologist, in consultation with the Yurok Tribe and the Applicant, will develop a Cultural Resources Management Plan (CRMP). The CRMP will include provisions for establishing Archaeologically Sensitive Areas (ASAs), specific locations where directional drilling is required in the vicinity of known archaeological sites, and an Archaeological Monitoring Plan (AMP) that provides monitoring protocols for the Project. The CRMP will also establish management guidelines for protecting archaeological sites from future impacts. The CRMP will include the following specific components:</p> <ol style="list-style-type: none"> 1. Maps of known archaeological sites with a reference system so that clear boundaries are established in relation to the Project. 2. Maps with a buffer area of 100 feet around the boundaries of known sites establishing ASAs. 3. Provisions for fencing or other protective measures of ASAs. 4. Provisions for the removal of identifying markers for ASAs after construction in the area is complete. 5. Maps of specific locations where directional drilling will be required in the vicinity of known archaeological sites and provision for installation methods, including appropriate depth of directional drilling. 6. The outline of a worker cultural resources awareness training program that will be provided for all personnel involved in ground-disturbing activities. The program will detail the recognition and importance of archaeological resources, and procedures to follow should archaeological resources be encountered during construction. 7. An AMP that includes provisions for monitoring during ground-disturbing activities, including the locations and duration of monitoring, the anticipated roles of monitors, and the reporting requirements. 8. An Inadvertent Discovery Plan that includes actions to follow should an archaeological resource be encountered, including stopping work within 100 feet of the find, notifying the appropriate land management agency, and continuing the stop-work order until it can be evaluated by a qualified archaeologist and a Native American representative. The Inadvertent Discovery Plan will also include a research design and treatment plan to be instituted if a resource cannot be avoided. The research design and treatment plan will be completed in consultation with Native American representatives. 9. Provisions that the California Public Utilities Commission (CPUC) and BIA, together with the appropriate land managing agency if on federal land, will determine whether avoidance is feasible in light of factors such as the nature of the inadvertent discovery, Project design, costs, and other considerations. If avoidance is not feasible, other appropriate measures (e.g., data recovery as agreed upon between CPUC, BIA, the appropriate land managing agency if on federal land, the archaeological consultant, and Native American representatives) will be instituted

TABLE 2-7 (CONTINUED)
APPLICANT PROPOSED MEASURES

APM	Measure Description
CR-3	If human remains are discovered, construction will be halted, and the coroner will be notified. If it is determined that the remains meet NAGPRA criteria, measures specified in NAGPRA regulations will be followed on federal lands.
CR-4	The Karuk Tribe will supply Native American Monitors in the Karuk Ancestral Territory, the Yurok Tribe will supply Native American Monitors in the Yurok Ancestral Territory, and the Wiyot Tribe will supply Native American Monitors in the Wiyot Ancestral Territory. Where ancestral territories are mapped as overlapping, monitors from both tribes will work in tandem.
CR-5	Where depth of archaeological resources in highly sensitive areas can be known or assumed, directional drilling may be required by land managing agencies to avoid cultural resources. Directional drilling depths should be at least two feet below known maximum depth of cultural resources. If fractured bedrock must be drilled, preventing the inadvertent release of drilling fluids (inert clays and water) cannot be guaranteed.
AIR-1	Fugitive dust produced during construction will be controlled with watering as needed. Watering will only settle the dust and will not create runoff.
AIR-2	Trucks and heavy equipment used during construction of this Project will meet California Air Resources Board standards for air pollution control for their model year.
WATER-1	The construction contractor will be required to develop and file a SWPPP and to comply with the permit conditions as issued by the State Water Resources Control Board, Region 1.
WATER-2	Construction industry standard practices and BMPs will be used for spill prevention and containment.
VIS-1	In areas with high scenic sensitivity, such as RNP, markers indicating underground fiber optic cable will be 2 feet tall 4 x 4 inches treated wooden posts with attached dulled metal signs that are legible but not visually intrusive, or as specified by the land managing agency. In part of the RNP above-ground markers will not be used and instead a specialized detection system will be installed in new underground splice vaults to avoid visual impacts. The Applicant will consult with NPS as to the specific location and type of markers that will be installed.
VIS-2	Where required by the land managing agency or landowner, safety markers indicating the presence of underground utilities can be omitted. Additional detection systems will be installed in the vaults and along the fiber optic cable lines.
TRANS-1	Traffic control measures such as traffic control personnel, warning signs, lights, and barriers will be used during construction as specified in the encroachment permits from road managers to ensure safety and to minimize traffic congestion.
TRANS-2	Emergency vehicle access to private property will be maintained during construction.
TRANS-3	Roads negatively affected by construction and as identified by the agencies will be returned to preconstruction condition.
FIRE-1	<p>Before the start of construction, the Applicant's Construction Contractor will prepare a project-specific Construction Fire Prevention Plan (CFPP) to ensure the health and safety of construction workers and the public from fire-related hazards. Local fire departments shall be consulted during plan preparation and the CFPP will include fire safety measures as recommended by these departments. The CFPP shall list fire prevention and extinguishment procedures and specific emergency response and evacuation measures that would be followed during emergency situations. The CFPP also would provide smoking and fire-related rules, storage, and parking areas, require usage of spark arrestors on construction equipment, and fire-suppression tools and equipment. The CFPP shall include, but not be limited to, the following:</p> <ol style="list-style-type: none"> 1. Water tanks, water trucks, or portable water backpacks (where space or access for a water truck or water tank is limited) will be sited/available in the Project area for fire protection where fire hydrants are not available. 2. All construction vehicles shall have fire suppression equipment. 3. All construction workers shall receive training on the proper use of fire-fighting equipment and procedures to be followed in the event of a fire. 4. As construction may occur simultaneously at several locations, each construction site shall be equipped with fire extinguishers and fire-fighting equipment sufficient to extinguish small fires. 5. Construction personnel shall be required to park vehicles away from dry vegetation.

**TABLE 2-7 (CONTINUED)
APPLICANT PROPOSED MEASURES**

APM	Measure Description
	<p>6. Prior to construction, contact and coordinate with the appropriate fire departments to determine the appropriate amounts of fire equipment to be carried on the vehicles and appropriate locations for the water tanks, water trucks, and/or water backpacks. The Applicant shall submit verification of its consultation with the appropriate fire departments to the CPUC.</p> <p>7. The CFPP shall be submitted to CPUC prior to commencement of construction activities and shall be distributed to all construction crew members prior to construction of the Project.</p> <p>8. Cease work during Red Flag Warning events in areas where vegetation would be susceptible to accidental ignition by Project activities (such as welding or use of equipment that could create a spark). During Red Flag Warning events all non-emergency construction and maintenance activities will cease in affected areas.</p>
HAZ-1	<p>The Applicant shall prepare a Hazardous Materials Management Plan (HMMP) for approval by the CPUC. The HMMP shall be prepared and submitted at least 30 days prior to the start of construction. The HMMP shall include, but not be limited to, the following requirements:</p> <p>1. The Applicant's Construction Contractor shall prepare a Hazardous Substance Control and Emergency Response Plan (Plan) and implement it during construction to ensure compliance with all applicable federal, state, and local laws and guidelines regarding the handling of hazardous materials. If the Project would result in the storage or handling of a Threshold Quantity or greater of a hazardous substance as defined by the California Hazardous Materials Release Response Plan and Inventory Law, the Plan shall include preparation and implementation of a Hazardous Materials Business Plan that describes the hazardous materials usage, storage, and disposal to the appropriate Certified Unified Program Agency. The Plan shall prescribe hazardous material handling procedures to reduce the potential for a spill during construction, or exposure of the workers or public to hazardous materials. The Plan shall also include appropriate response actions in the event that hazardous materials are released or encountered during excavation activities. The Plan shall be submitted to the CPUC for review and approval prior to the commencement of construction activities. The Plan shall require that the Applicant and/or its contractors shall implement construction best management practices including but not limited to the following:</p> <ul style="list-style-type: none"> a. Follow manufacturer's recommendations on use, storage, and disposal of chemical products used in construction. b. Avoid overtopping construction equipment fuel gas tanks. c. Use tarps and oil-absorbent pads under vehicles when refueling to contain and capture any spilled fuel. d. During routine maintenance of construction equipment, properly contain and remove grease and oils. e. Properly dispose of discarded containers of fuels and other chemicals.
OM-1	<p>Before beginning an operations or maintenance project, KRRBI contractors or their subcontractors will clean all equipment that will operate off-road or disturb the ground. The entire vehicle or equipment will be cleaned at an off-site location.</p>
OM-2	<p>The Tribe will provide crews and contractors with maps showing environmentally sensitive areas; these maps will include work zones as well as ROW areas where ground disturbance will be avoided.</p>

NOTES: BMP = best management practice; Caltrans = California Department of Transportation; CEQA = California Environmental Quality Act; CWA = Clean Water Act; GDR = Green Diamond Resource Company; KRRBI = Klamath River Rural Broadband Initiative; NAGPRA = Native American Graves Protection and Repatriation Act; NEPA = National Environmental Policy Act; NFS = National Forest System; NPS = National Park Service; NSO = northern spotted owl; Project = Klamath River Rural Broadband Project; RNP = Redwood National Park; SWPPP = storm water pollution prevention plan

SOURCE: Karuk Tribe, 2020

CHAPTER 3

Alternatives

3.1 Introduction

The identification and evaluation of alternatives is not required in a California Environmental Quality Act (CEQA) Initial Study (IS)/Mitigated Negative Declaration. Under the National Environmental Policy Act (NEPA), however, an environmental assessment (EA) must evaluate feasible action alternatives,¹ except in cases when there are no unresolved conflicts with respect to alternative uses of available resources associated with the project (NEPA Section 102(2)(E); Code of Federal Regulations Title 43, Section 46.310(b); BIA, 2012). The presence of “unresolved conflicts” is considered to represent circumstances when the lead agency and/or project stakeholders identify either a potential alternative use for resources that would be utilized or affected by the project or a potential future adverse outcome that could occur as a consequence of a project’s implementation (BIA, 2012).

The Project proposes the implementation of broadband infrastructure to provide beneficial high-speed internet access to an underserved region of California (see Chapter 1, Section 1.4). The Project would consist primarily of the installation of fiber-optic cable on existing communication poles, with the limited installation of several new poles and other infrastructure (see Chapter 2, Section 2.5). Implementing the Project would not prevent other communication services from using the same infrastructure in the future. The Project also would not result in any unmitigable adverse impacts on available resources or create circumstances that would result in future adverse effects on such resources.

Therefore, because there are no unresolved conflicts with respect to the Project, this ISMND/EA does not evaluate additional alternatives to the Project other than the No-Project Alternative². The Project and No-Project are considered to represent a reasonable range of alternatives for the purpose of NEPA. For a description of the alternatives analysis process undertaken for this Project, see Appendix A.

3.2 No-Project Alternative

The No-Project Alternative represents a scenario under which the Project would not be implemented. This alternative assumes that the communities within the Project area would

¹ NEPA Section 102(2)(E) requires the consideration of a reasonable range of alternatives that would avoid or minimize adverse effects on the quality of the human environment.

² *No-Project Alternative* is used in this document to also refer to the No-Action Alternative for the purposes of NEPA.

continue to receive current internet service into the foreseeable future, and that upgrades could be applied to those services, but that infrastructure would not be expanded.

Under the No-Project Alternative, the existing environmental setting would be generally maintained. Changes to that setting that would result from construction, operation, and maintenance of the Project would not occur, and local communities and businesses would not realize the benefits of improved communication. Existing wireless infrastructure would remain in place, and internet service would generally continue to be provided as it is now. No permits, encroachment permits, or easements would be granted for the installation of broadband infrastructure to serve the Project area under the No-Project Alternative.

No legal, regulatory, or technical feasibility issues were identified that would eliminate the No-Project Alternative from consideration. However, this alternative would not meet any of the Project objectives, purposes, or need. As a no-development alternative, the No-Project Alternative would avoid all Project-related impacts. It would cause no new impacts on the physical environment. Existing land uses would continue to affect environmental conditions as they are now.

For purposes of the U.S. Bureau of Indian Affairs' consideration under NEPA, the environmental consequences of the No-Project Alternative are as follows:

- **Aesthetics:** Localized and minor impacts on scenic vistas, scenic resources, and visual character and impacts resulting from construction lighting would not occur.
- **Agriculture and Forestry Resources:** Localized and minor impacts on Prime Farmland would not occur.
- **Air Quality:** Short-term, localized, and minor impacts associated with an increase in criteria pollutants during construction would not occur.
- **Biological Resources:** Localized, moderate impacts on biological resources would not occur.
- **Cultural Resources:** Localized, moderate impacts on cultural resources would not occur.
- **Energy:** Short-term, minor impacts associated with energy consumption would not occur.
- **Geology, Soils, and Paleontological Resources:** Short-term, localized, and minor impacts associated with erosion would not occur.
- **Greenhouse Gas Emissions:** Short-term, localized, and minor impacts associated with generation of greenhouse gas emissions would not occur.
- **Hazards and Hazardous Materials:** Short-term, localized, and minor impacts associated with the transportation and use of hazardous materials and potential increased risk of wildfire would not occur.
- **Hydrology and Water Quality:** Short-term, localized, and minor impacts associated with water quality, groundwater supplies, and drainage would not occur.
- **Land Use and Planning:** Similar to the Project, no impact would occur.
- **Mineral Resources:** Similar to the Project, no impact would occur.

- **Noise:** Short-term, localized, and minor impacts associated with increased noise and groundborne vibration would not occur.
- **Population and Housing:** Similar to the Project, no impact would occur.
- **Public Services:** Similar to the Project, no impact would occur.
- **Recreation:** Similar to the Project, no impact would occur.
- **Socioeconomics and Environmental Justice:** Minor, beneficial impacts associated with socioeconomics and environmental justice would not occur.
- **Transportation and Traffic:** Short-term, localized, and minor impacts associated with conflicts with an applicable circulation plan, use of construction equipment, and emergency access would not occur.
- **Utilities and Service Systems:** Localized and minor impacts associated with wastewater treatment and beneficial impacts of new broadband service would not occur.
- **Wildfire:** Short-term, localized, and minor impacts associated with increased risk from wildfire would not occur.

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CHAPTER 4

Environmental Analysis

This chapter provides discussion and full public disclosure of the environmental impacts of the Project. This chapter examines the potential environmental impacts associated with the Project as they relate to the following 20 resource areas:

- | | |
|---|---|
| 4.1 Aesthetics and Visual Resources | 4.11 Land Use and Planning |
| 4.2 Agriculture and Forestry Resources | 4.12 Mineral Resources |
| 4.3 Air Quality | 4.13 Noise |
| 4.4 Biological Resources | 4.14 Population and Housing |
| 4.5 Cultural Resources ¹ | 4.15 Public Services |
| 4.6 Energy Conservation | 4.16 Recreation |
| 4.7 Geology, Soils, and Paleontological Resources | 4.17 Socioeconomics/Environmental Justice |
| 4.8 Greenhouse Gas Emissions | 4.18 Transportation and Traffic |
| 4.9 Hazards and Hazardous Materials | 4.19 Utilities and Service Systems |
| 4.10 Hydrology and Water Quality | 4.20 Wildfire |

4.0 Environmental Assessment Methodology

4.0.1 Environmental Baseline

The analysis of each issue area begins with an examination of the existing physical setting (baseline conditions as determined pursuant to State CEQA Guidelines Section 15125[a]) that may be affected by the Project. *Impacts* are defined as changes to the environment attributable to construction or operation of a project. Pursuant to State CEQA Guidelines Section 15125(a), the environmental setting used to determine the impacts associated with the Project is based on existing environmental conditions in the Study Area at the time of preparation of this ISMND/EA.

¹ Note that Section 4.5, Cultural Resources includes Tribal Cultural Resources consideration and analysis.

4.0.2 Environmental Consequences

Introduction

This chapter documents the lead agencies' analysis of the potential direct, indirect, and cumulative effects of the Project. It presents the evaluation of short-term uses, such as construction-related truck traffic, and the impacts of activities that would occur over the longer-term operation period, such as vegetation removal during maintenance. It also identifies mitigation measures that could avoid or reduce adverse impacts.

Significance² criteria are identified for each environmental issue area. The significance criteria serve as benchmarks for determining whether a component action would result in a significant adverse environmental impact when evaluated against the baseline (before the implementation of mitigation). The Project would be regulated by the various laws, regulations, and policies summarized in the Regulatory Framework (Appendix F). This analysis assumes that the Project would comply with applicable federal, state, and local laws and regulations, and that state and local agencies would continue to enforce applicable requirements to the extent that they do so now.

Types of Effects

The Project's potential direct, indirect, and cumulative effects are considered for each resource. The terms *effects* and *impacts* as used in this document are synonymous and could be beneficial or detrimental.

CEQA

For CEQA purposes, State CEQA Guidelines Section 15358 defines *effects* and *impacts* synonymously to include both direct effects, which are caused by the project and occur at the same time and place, and indirect secondary effects, which are caused by the project and are later in time or farther removed in distance, but are still reasonably foreseeable.

Cumulative effects refer to two or more individual effects, which, when considered together, are considerable or that compound or increase other environmental impacts (State CEQA Guidelines Section 15355). The cumulative effect of several projects is the change in the environment that 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 (State CEQA Guidelines Section 15355). In this document, cumulative impacts are evaluated in Section 4.21, *Mandatory Findings of Significance*.

This ISMND/EA evaluates the potential environmental impacts that the Project would create. Each impact is assigned one of the following significance conclusions:

² According to Section 15382 of the State CEQA Guidelines, a *significant effect on the environment* means “a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project.”

- *Less than Significant with Mitigation*: Can be mitigated to a level that is less than significant.
- *Less than Significant*: No mitigation is required.
- *No Impact*: The Project would not have any effect on the resource.

NEPA

For NEPA purposes, Council on Environmental Quality (CEQ) regulations³ define *direct effects* as effects “...which are caused by the action and occur at the same time and place” and *indirect effects* as effects “...which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable” (Code of Federal Regulations Title 40, Sections 1508.8[a] and 1508.8[b] [40 CFR 1508.8(a)–1508.8(b)]). This document combines the discussions of direct and indirect effects. Chapter 4 also provides descriptions of the residual effects of any adverse impacts that remain after mitigation measures have been applied.

CEQ regulations define a *cumulative effect* as “...the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such actions” (40 CFR 1508.7). The scenario used for defining and analyzing cumulative impacts is discussed in Section 4.21. Pursuant to NEPA, this ISMND/EA also evaluates potential impacts in terms of their context⁴ and intensity⁵ and defines direct and indirect effects (40 CFR 1508.8, 40 CFR 1508.27). The terms defined below are applied to the impact analyses in this ISMND/EA, as appropriate.

Context Terminology

- *Short-term*: Effect that occurs during construction.
- *Long-term*: Effect caused during either construction and/or operations and remaining after construction is completed.
- *Localized*: Effect that remains at the construction site, within the Project area, or near the Project area.
- *Widespread*: Effect that extends well beyond the Project area and may affect a regional area.

Intensity Terminology

- *Adverse*: A negative effect on a particular resource or resource use.
- *Beneficial*: A positive effect on a particular resource or resource use.
- *None/Negligible*: No change/no measurable change to current conditions.
- *Minor*: A slight but detectable adverse effect; a small change would occur. No mitigation is required.

³ This EA has been prepared in accordance with the CEQ NEPA regulations that were issued in 1978 and were in place when work commenced on this EA in 2018.

⁴ With respect to the term *context*, 40 CFR 1508.27 states that significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant.

⁵ As stated in 40 CFR 1508.27, the term *intensity* refers to the severity of impact.

- *Moderate*: A readily apparent and measurable adverse effect. Mitigation is required.

This ISMND/EA evaluates the environmental consequences and potential impacts that the Project would generate. The impacts identified were compared with predetermined, specific significance criteria, and were classified according to the significance categories listed for each resource area. When significant impacts were identified, feasible mitigation measures were formulated to eliminate or reduce the intensity of the impacts and focus on the protection of sensitive resources. The mitigation measures recommended in this document are identified in the respective sections for each issue area (Sections 4.1 through 4.20) and are presented in the Mitigation Monitoring, Compliance and Reporting Program in Chapter 6 of this document.

4.1 Aesthetics and Visual Resources

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
1. AESTHETICS AND VISUAL RESOURCES—Would the project:				
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings? (Public views are those that are experienced from publicly accessible vantage point.) If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Create a new source of substantial light or glare which would adversely affect daytime or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

4.1.1 Environmental Setting

This section describes the visual resources in the Study Area (defined below), and the associated regulatory framework. The impact analysis presents the significance criteria used to evaluate impacts of the Project on identified resources, the methods used to evaluate these impacts, and the results of the impact assessment based on the applied significance criteria.

The Study Area for aesthetic and visual resources includes the proposed location of all Project components as well as the landscapes and surrounding areas (or viewshed) within which the Project’s facilities would be visible. The visual analysis focuses on travel route views, and views from parks and recreational areas within the Study Area where the proposed features would be visible. Aesthetic or visual resources consist of the landforms, forests and other vegetation, rock and water features, and cultural modifications—such as the built environment—that contribute to the overall visual character and sensitivity of a landscape.

This analysis of potential visual effects is based on a review of data including maps and drawings prepared by the Applicant, photographs taken during site visits to the Study Area, planning documents, and other publicly available materials.

Definitions Related to Visual Resources

Aesthetic or visual resources are generally defined as both the natural and built features of the landscape that contribute to the public’s experience and appreciation of the environment. Depending on the extent to which a project’s presence would alter the perceived visual character and quality of the environment, a visual or aesthetic impact may occur.

Project Viewshed

A project's *viewshed* is generally defined as an area from which a project would be visible or could be seen by the public. For the purposes of describing a project's visual setting and assessing impacts on aesthetic and visual resources, the viewshed can be categorized into three general distance zones from which a project's features may be visible: foreground, middle ground, and background. The *foreground* is generally defined as within 0.5 mile from the viewer. At this distance, objects are most noticeable. The *middle ground* is the zone extending from 0.5 mile to 5 miles from the viewer, and the *background* is the field extending from approximately 5 miles to the horizon.

This analysis mainly considers effects on foreground views, given the increased noticeability of features in the foreground distance zone, although some consideration is also given to potential effects on middle ground and background views.

Visual Sensitivity

Visual sensitivity is the overall measure of an existing landscape's susceptibility to adverse visual changes. This analysis of visual sensitivity is based on the combined factors of visual quality, viewer types and volumes, and visual exposure to the Project. Visual sensitivity is assessed in terms of high, moderate, or low visual sensitivity ranges, and is a composite measurement of the overall susceptibility of an area or viewer group to adverse visual or aesthetic impacts (BLM, 1986). Areas in the Study Area with higher visual sensitivity include public recreational areas such as Redwood National Park (RNP), and Six Rivers National Forest (SRNF), as these are places highly valued for their scenic qualities.

Visual Quality/Character

Visual quality is defined as the overall visual impression or attractiveness of an area as determined by its particular landscape characteristics, including landforms, rock forms, water features, and vegetation patterns. The attributes of variety, vividness, coherence, uniqueness, harmony, and pattern contribute to the overall visual quality and character of an area. For the purposes of this study, visual quality is characterized as follows:

- *Indistinctive*—generally lacking in natural or cultural visual resource amenities typical of the region.
- *Representative*—typical or characteristic of the region's natural and/or cultural visual amenities.
- *Distinctive*—unique or exemplary of the region's natural or cultural scenic amenities.

Viewer Types and Volumes of Use

Viewer types and volumes of use pertain to the types of user (e.g., recreational user, motorist) and quantities of each type of use that a particular location receives. Land uses that derive value from the quality of their settings are considered sensitive to potential changes in visual setting conditions. Land uses in the Study Area that may be sensitive to change in visual conditions

include designated scenic highways, designated scenic roads, designated scenic rivers, and forests, parks, and recreational areas.

The primary viewers of the Project components would include local residents, as well as motorists and other tourists traveling through the Study Area. In general, local residents would have heightened sensitivity to potential visual changes in the surroundings, given their familiarity with the existing scenic landscape, as well as their frequency and duration of views. Tourists seeking recreational opportunities (including observing the scenic elements of a landscape) may also have heightened sensitivity to views as they travel through the Study Area.

Viewer Exposure

Viewer exposure affects viewing conditions from potentially sensitive areas, and encompasses the following factors:

- Landscape visibility (the ability to see the landscape).
- Viewing distance (i.e., the proximity of viewers to the Project)—viewing distances are described according to whether the Project elements would be viewed within a foreground, middle ground, or background zone.
- Viewing angle—whether the Project would be viewed from above (superior), below (inferior), or from a level (normal) line of sight.
- Extent of visibility—whether the line of sight is open and panoramic to the Project area or restricted by terrain, vegetation, and/or structures.
- Duration of the view.

Existing Visual Quality of the Region

The Project would be generally located along existing roadways within the Study Area in terrain ranging in elevation from approximately 25 feet to 3,130 feet above mean sea level. Rural Humboldt County, including much of the Study Area, offers dynamic views containing mountains, forests, rivers, heritage landscapes, and a variety of striking natural features of interest to residents and visitors alike.

Forests

Forest land is a prominent component of the visual landscape of Humboldt County, covering more than 80 percent of the total land area. RNP and SRNF are both significant and protected forests that intersect the Project Study Area. The scenic qualities of these natural resources are highly valued among the community. Although the majority of the Study Area is sparsely populated, the national parks attract both domestic and international recreational visitors. The majority of Segment 1 of the Project's fiber optic cable alignment crosses through SRNF, which is managed by the U.S. Forest Service (USFS). Segments 3 and 4 would cross through forests and prairies of RNP, which is cooperatively managed by the National Park Service (NPS) and the California Department of Parks and Recreation.

Scenic Roads and Highways

Scenic roads provide motorists with opportunities to enjoy the natural and scenic landscapes. Scenic roads generally offer expansive views of natural resources or landmarks, as well as areas of historic and cultural interest. Many roads in the Study Area have unique scenic qualities such as expansive views of forests, rivers, and mountains in the region. Bald Hills Road, encompassing approximately 9 miles of Segment 3 and the entire length of Segment 4 in RNP, is considered a scenic road by NPS, although no formal scenic road designation is in place (NPS, 2017a). As discussed in Section 4.5, Bald Hills Road is a contributing resource to the Lyons Ranches Historic District listed in the National Register of Historic Places.

A *scenic highway* is generally defined as a highway that, in addition to its transportation function, provides opportunities for the enjoyment of natural and scenic resources. Several scenic highways provide such opportunities in Humboldt County. Although none are officially designated through the California State Scenic Highway program, several have been proposed for eligibility, including U.S. Highway 101 (U.S. 101) in Humboldt County and State Route (SR) 96 from SR 299 at Willow Creek north to Siskiyou County (Caltrans, 2018). The Orick Tower is proposed to be installed near U.S. 101 in Orick. Segment 1 from Weitchpec to Orleans would be installed along a portion of SR 96.

Scenic Vistas

A *scenic vista* is generally defined as a location from which the public can experience unique and exemplary high-quality views, which may be from an elevated vantage point offering panoramic perspectives of great breadth and depth. The Study Area contains a multitude of scenic vistas meeting this description including views of forests, rivers, and distant mountains.

Scenic Rivers

Scenic rivers, as defined in the California Public Resources Code (Section 5093.53), are those that are “free of impoundments, with shorelines or watersheds still largely primitive and shorelines largely undeveloped, but accessible in places by roads.” Portions of the Klamath River in the Study Area are officially designated as a “wild and scenic river,” as described in more detail in Section 4.1.2.

Scenic Character in the Study Area by Segment

Segment 1

Segment 1 includes a portion of SR 96, an eligible scenic highway, with roadside views of adjacent forests and the Klamath River, along with distant views of mountains in the SRNF (Figure 4.1-1).

Segment 2

Similar to Segment 1, Segment 2 includes lands with expansive forest and river views, some with existing built features such as existing multi-use poles along SR 169 and a bridge crossing the Klamath River, as shown in Figure 4.1-2.

Segment 3

Segment 3 contains landscapes with a combination of forested lands and coastal prairies, along Bald Hills Road (**Figure 4.1-3**). Portions of Bald Hills Road are within the Lyons Ranch Historic District. Figure 4.1-3 shows the trailhead at Lyons Ranch looking southeast.

Segment 4

Segment 4 includes landscapes along Bald Hills Road and the forests of RNP to the town of Orick, which contains some existing industrial features (**Figure 4.1-4**). Portions of Bald Hills Road are within the Lyons Ranch Historic District.

Segment 5

Segment 5 includes coastal landscapes along U.S. 101. **Figure 4.1-5** shows representative photographs depicting the existing Pacific Gas and Electric Company transmission line near Hammond Truck Road within the Green Diamond Resource Company (GDR) lands.

4.1.2 Regulatory Framework

For a discussion of federal, state and local regulations that are relevant to the Project see Appendix F.

4.1.3 Applicant Proposed Measures

The following Applicant Proposed Measures (APMs) related to visual resources have been included as part of the Project:

- **APM SOIL-1:** Disturbance of soils, rocks and vegetation removal will be limited to the minimum area necessary for access and construction.
- **APM VIS-1:** In areas with high scenic sensitivity, such as RNP, markers indicating underground fiber optic cable will be 2 feet tall 4 x 4 inches treated wooden posts with attached dulled metal signs that are legible but not visually intrusive, or as specified by the land managing agency. Markers are typically placed near each vault. Vaults are typically located a mile apart to allow for routine splicing of fiber optic cable, except where they are installed more frequently at change of installation method (from trenching to directional drilling, for example, whether to go under a road culvert or under the road). In RNP within the Lyons Ranches Historic District, aboveground markers will not be used; instead, a specialized detection system will be installed in new underground splice vaults to avoid visual impacts. The number of markers will be minimized and the Applicant will consult with NPS to identify the type and location of markers.
- **APM VIS-2:** Where required by the land managing agency or landowner, safety markers indicating the presence of underground utilities can be omitted. Additional detection systems will be installed in the vaults and along the fiber optic cable lines.
- **APM TRANS-3:** Roads negatively affected by construction and as identified by the agencies will be returned to preconstruction condition.

4.1.4 Environmental Impacts and Mitigation Measures

a) Have a substantial adverse effect on a scenic vista. *Less than Significant; Localized; Minor.*

Project components would be placed in both aboveground and underground positions in areas containing scenic vistas, including along scenic roadways through the SRNF and within RNP. Construction would include the use of staging and laydown areas, the presence of materials and equipment, and activities such as roadside trenching and road pavement cutting (to facilitate cable installation). Such activities could temporarily affect views or otherwise include elements contributing to visual intrusions to scenic vistas. However, impacts would be temporary and localized and would not be substantial. At the conclusion of construction, vehicles and equipment would be removed from the site and roads would be returned to their preconstruction condition (per APM TRANS-3). Therefore, visual impacts related to this construction activity would be short-term, less than significant, localized, and minor.

Construction and operation of the Project's 90-foot-tall Orick Tower would present a change to the existing visual landscape. The tower is proposed to be placed on agricultural land south of U.S. 101 near existing utilitarian elements including a fenced California Department of Transportation (Caltrans) maintenance and storage yard, power poles, and lines, and across from a former gas station. Although the proposed new structure would be noticeable, the new tower in Orick would be situated among other previously constructed utilitarian elements of the landscape and would not present a substantial adverse effect on a scenic vista. Impacts would be less than significant, localized, and minor.

The proposed facility upgrades at the existing Antenna Ridge relay station would include installation of two 3-foot antennae mounted atop a 30-foot lattice tower, along with a small rooftop solar array upon a 6-foot by 6-foot battery station. Security fencing for this site is also proposed for installation. Along with these components, new antennae are also proposed for the site of the existing USFS tower near Orleans. The proposed new elements would be placed on sites previously used as communications facilities; the relay station and tower are a preexisting part of the visual landscape. Although the antennae and associated structures could be noticeable to hikers and other outdoor enthusiasts, the proposed components would be placed on existing structures and would not result in substantially adverse effects on existing vistas.

Project upgrades to the existing Yurok wireless towers would occur on previously disturbed sites and would not significantly alter existing views. The proposed 20-foot extension of the Wiregrass Tower would be installed in a remote location on Bald Hills Road on an existing communication tower, presenting a moderate visual change to the existing vistas.

Approximately 49 miles of the Project's fiber optic cable alignment would be placed in underground trenches or other subsurface positions, and portions including Segments 3 and 4 along Bald Hills Road would be installed in scenic landscapes such as RNP. However, because of the subsurface placement of these Project components, there would be no residual visual impacts following construction. The visible elements of the fiber optic route would consist of installation of a total of 0.8 mile of new overhead lines, which would include the presence of guy wires, anchors, and six new wooden poles. The new overhead installations would facilitate stream

crossings on either side of the Klamath River (Segment 1 at Orleans and Segment 2 at Martins Ferry), Redwood Creek (Segment 4 at Orick), and Luffenholtz Creek (Segment 5 on GDR lands). Although the new components would be placed in scenic areas, the presence of these new elements would not adversely affect existing views. Moreover, the 0.8 mile of new overhead components would constitute less than 1 percent of the Project's total (approximately 104-mile) length of linear features (with all segments combined). Thus, the proposed components would present a moderate visual change, compared to existing conditions.

Additional visible elements would include 28.6 miles of new cables (primarily in Segment 2) that would be placed on existing poles in a shared overhead position with previously installed lines. The placement of cables on existing poles would present an insignificant visual change compared to existing conditions. The remainder of the proposed alignment would be placed either in existing conduit or in new conduit installed on the underside of bridges that would not be visible to motorists, and as such, would have no impact on scenic vistas. Signage would be designed to be visually unobtrusive, per APMs VIS-1 and VIS-2.

Although some Project components including the Orick Tower and wireless tower upgrades may be noticeable, the overall visual change presented by Project elements would be slight. Therefore, impacts on scenic vistas in the Study Area would be less than significant, localized, and minor.

Mitigation: None required.

b) Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway. *Less than Significant; Localized; Minor.*

Although the Project would not be located within a designated scenic highway, portions of the Project would be located alongside two eligible state scenic highways (SR 96 and U.S. 101). Construction of the Project would include the temporary presence of construction equipment, materials, and vehicles in this area. Construction would also require some vegetation removal within the existing communications corridor, to facilitate placement of overhead and subsurface cables. However, no tree removal is proposed and no damage to rock outcroppings or historic structures is anticipated as part of the Project. Construction-related impacts would be temporary and less than significant.

At the conclusion of construction, vehicles and equipment would be removed from the site, and roads would be returned to their preconstruction condition (per APM TRANS-3). As stated above in response to question a), the majority of Project components would consist of new fiber optic cable installed either underground or on existing poles. These components would not present a substantial visual change, nor would they damage existing scenic resources in the Study Area. Maintenance of these components would consist of annual inspections, and as-needed repairs, which could include minor vegetation trimming, as would be consistent with the routine maintenance of an existing utility corridor. Therefore, overall impacts would be less than significant, localized, and minor.

- c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings. (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, conflict with applicable zoning and other regulations governing scenic quality. *Less than Significant; Localized; Minor.***

The existing visual character of the Study Area can generally be described as coastal and mountainous, forested landscapes shaped by rivers, interspersed with small rural towns containing some constructed elements, along with historic features. Although portions of the Study Area contain views of mountains, scenic rivers, and forests that are aesthetically pleasing to residents and visitors, other portions of the Study Area contain industrial elements and include existing built features. The Project would involve both aboveground fiber optic cable lines mainly using existing poles in shared installations, and fiber optic cables placed in subsurface positions. These Project components would result in short-term, less-than-significant, localized, and minor construction-related impacts, as well as less-than-significant and minor operational impacts related to the visual quality of the Study Area, as discussed below.

Construction

Project construction would involve temporary impacts on the existing visual character of the Study Area, because the presence of construction equipment and materials, along with disruption of surfaces (i.e., trenching), would present temporary visual intrusions to an otherwise scenic landscape. Construction-related impacts would be temporary (limited to the Project's approximate 19-month construction period). At the conclusion of construction, per APM TRANS-3, road surfaces would be returned to their preconstruction condition; thus, impacts would be temporary, less than significant, and minor.

Operation

Although some segments of the Project would include visible features, such as aboveground cables installed on existing poles, others would be less visible, installed either underground or in remote locations, far from the view of residents and visitors traveling through the region. Segment 1 and Segment 2 would use existing poles in a shared installation and would also include installation of two new poles alongside existing poles to facilitate crossing the Klamath River at the Martin's Ferry Bridge. Although the new poles would be noticeable, their presence alongside existing poles would not significantly alter the character of the landscape. Segment 3 consists entirely of trenched (belowground) installations, mainly within the road prism of Bald Hills Road. Few visible features would be evident in Segment 3 after construction.

Segment 4 would include both forested lands and landscapes with industrial elements. Figure 4.1-4 shows Orick with the Caltrans storage facility in the foreground, along with distant views of the coastal mountains in the background. The Project's Orick Tower would include installation of fencing, an ice bridge, and a 90-foot-tall tower adjacent to a Caltrans storage yard in Orick, which would be noticeable to residents and visitors traveling through the town. However, the presence of the tower and associated structures would not substantially degrade the existing visual character or quality of the site and its surroundings. Other industrial elements such as fencing and a storage yard are already present near the proposed site (Figure 4.1-4). Thus, although this

component of the Project would present a noticeable visual change, the change would not be out of character compared to existing conditions in Orick.

Segment 5 would include both aboveground and subsurface installations, through public lands of RNP and private timber lands of GDR. Few visible features would be present for the subsurface installations after construction.

The proposed upgrades to the existing Yurok towers would also include some noticeable elements, as described in Section 2.6.6. This would include many visible features. Generators would be replaced at the Wiregrass, Miners Creek, and Wautec facilities; an existing Conex container would be replaced and solar panels would be installed on existing and replacement facilities, and a Supervisory Control and Data Acquisition, or SCADA, system would be implemented at the Wiregrass site upon Yurok Trust land.

Remote power upgrades would also occur at the McKinnon Hill and Weitchpec facilities. Additional upgrades are proposed at the Wiregrass Tower site, which would include installation of additional guy wires to accommodate a 20-foot vertical extension to the existing 30-foot Rohn (lattice) tower, shown in Figure 2-4.

The Project's facility upgrades would occur on previously disturbed existing communications sites. Replacement generators, and other structural elements proposed for replacement and/or installation, would include noticeable features, but would not appreciably alter the existing visual character or quality of the sites and their surroundings.

As noted in response to question a), the majority of other Project components would either be unnoticeable (in subsurface installations) or moderately noticeable (placed on existing infrastructure) after construction. The Project would include relatively few new visible components; therefore, the existing visual character or quality of the site and its surroundings would not be substantially degraded as a result of construction or operation of the Project. Per APMs VIS-1 and VIS-2, in areas of high scenic sensitivity such as at RNP, markers indicating the presence of the underground fiber optic cables would be placed in such a way as to not be visually intrusive. Overall, the potential for the Project to degrade the existing visual character and quality of the site and its surroundings would be less than significant, localized, and minor.

Mitigation: None required.

d) Create a new source of light and glare that could adversely affect views in the area. *Less than Significant; Localized; Minor.*

During construction, minimal lighting may be used for traffic control at key intervals along public roads as a safety measure. The Project would be constructed during daylight hours and would generally not otherwise require lighting during construction. The proposed Orick Tower would include only motion-sensitive security lighting that could produce intermittent light at the entrance to the facility, but would not otherwise affect daytime or nighttime views. As discussed in Section 2.5, upgrades to the Antenna Ridge Relay Station and the Wiregrass, Minors Creek, and McKinnon Hill Tower sites would include placement or replacement of a set of four

(approximately 3-foot by 5-foot) solar panels mounted at a 40-degree angle, which could create minor and localized new sources of glare. However, the sites are remote, and the presence of these elements would be unlikely to significantly adversely affect views. Impacts related to light and glare would be less than significant, localized, and minor.

Mitigation: None required.

4.1.5 NEPA Alternatives

No-Project Alternative

Under the No-Project Alternative, the Project would not be constructed, operated, or maintained; the Project site would continue to be used as under existing conditions. Therefore, the No-Project Alternative would have no impact on aesthetics.

4.2 Agriculture and Forestry Resources

	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
2. AGRICULTURE AND FORESTRY RESOURCES				
<p>In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment project; and the forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board.</p> <p>Would the project:</p>				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined in Public Resources Code section 4526) or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

This section identifies and evaluates issues related to agriculture and forestry resources in the context of the Project. It describes agricultural lands and designated farmlands, Williamson Act contracts, forest and timberland zoning, and related uses, as applicable. This section further provides a discussion of applicable state, regional, and local plans and programs, and an evaluation of potential impacts associated with implementation of the Project. For the purpose of this analysis, the Study Area was defined as the Project footprint, including any areas of temporary or permanent disturbance.

4.2.1 Environmental Setting

Agricultural Resources

The Project is proposed for construction in the western coastal area of northern Humboldt County. Approximately 15 percent of Humboldt County's total land acreage is used for agricultural purposes. Most of these agricultural lands are used as cattle grazing ranches or cultivated with row crops and specialty agriculture. Other agricultural lands in the county are occupied by rural residential development or are being acquired for resource protection and

parkland (Humboldt County, 2017a). Agricultural production is an important component of Humboldt County's economy but is relatively small compared to the California average (Humboldt County, 2017a). The majority of highly productive soils, as defined by the U.S. Natural Resources Conservation Service (NRCS), occur in southern Humboldt County along the Mad River, Redwood Creek, Eel River deltas, and Humboldt Bay (Humboldt County, 2017a).

Forested Areas and Timberlands

There are approximately 1.9 million acres of forest lands in Humboldt County, covering more than 80 percent of the county's total land area. Of the 1.9 million acres of forestland in Humboldt County, 1.7 million acres are considered suitable for timber production, and approximately 1 million acres are designated by the Humboldt County (County) as Timber Production Zone (TPZ). Humboldt County is California's leading timber producer, contributing more than 20 percent to the state's total production since the year 2000 (Humboldt County, 2017a).

Approximately 47.6 miles of the Project would be located within or adjacent to TPZs (Kurok Tribe, 2020). Segment 1 would traverse 9.3 miles of Six Rivers National Forest (SRNF) (see Figure 2-3 2). The Project would cross land owned by Green Diamond Resource Company (GDR) in Segments 3 and 4 along Bald Hills Road and along Segment 5. Segment 1 crosses forest lands under the jurisdiction of the U.S. Forest Service and RNP. Segment 4 and portions of Segment 3 also include forests. Along Segments 3 and 4, the Project alignment would traverse a total of approximately 17 miles of RNP land. Large portions of the private and trust lands are forested within the Yurok Reservation along SR 169, along Tulley Creek Road in Segment 2, and along Segment 3 on Bald Hills Road (Karuk Tribe, 2020). Additional details of forestland designations are provided below.

Six Rivers National Forest

SRNF, managed by the U.S Forest Service, was established by President Harry S Truman in 1947 and includes more than a million acres of mountainous and forested land extending from just south of the Oregon border to Mendocino County. The forest is composed of extensive stands of coniferous forest, with moderate amounts of oak woodland and grassland in the southern portion. SRNF is managed to sustain and protect natural resources for their ecological and commercial value, and serves as an economic development resource in the region (USFS, 2018).

Redwood National Park

RNP, established in 1968 and expanded in 1978, is located along the northwest Pacific coast of California, just west of SRNF, between the cities of Klamath Glen to the north and Trinidad at the southern border of the park. RNP is home to some of the oldest and largest redwoods in the world. RNP is managed jointly by the National Park Service and the California Department of Parks and Recreation (see Figures 2-4, 2-5, and 2-7a in Chapter 2). Park managers work in consultation with the tribes to ensure the continuance of cultural practices in the region (National Park Service, 2018).

Green Diamond Resource Company

Green Diamond Resource Company (GDR) is a family-owned forest products company and manages working forest land in eight states in the western and southern United States.

In California, GDR lands have achieved Forest Management certification¹ under the Forest Stewardship Council standards and GDR harvests less than 2 percent of its land annually. All timber harvest areas owned by GDR are quickly replanted with native species to start the forest cycle anew (Green Diamond Resource Company, 2018).

4.2.2 Regulatory Framework

For a discussion of federal, state and local regulations that are relevant to the Project see Appendix F.

4.2.3 Applicant Proposed Measures

The Project has no Applicant Proposed Measures pertaining to agriculture and forestry resources.

4.2.4 Environmental Impacts and Mitigation Measures

a) **Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use. *Less than Significant; Localized; Minor.***

The Project consists primarily of the installation of fiber optic cable along paved roads and non-agricultural roadsides and would not affect any farmland. The FMMP currently contains no farmland classification data for Humboldt County; therefore, the FMMP has not mapped any areas of Prime Farmland, Unique Farmland, or Farmland of Statewide Importance in the Study Area. However, the County has conducted soil surveys and prime soils mapping from the NRCS, which have been used in this analysis to classify and designate farmland in the Study Area (Humboldt County, 2015; NRCS, 2016).

No parts of the Project area have been mapped as Unique Farmland or Farmland of Statewide importance and the Project would not be constructed within land under a Williamson Act contract (see Section 4.2.2 for details of the California Farmland Mapping System and the Williamson Act). Approximately 10.2 miles of the Project alignment would be located on land designated as Prime Farmland (Karuk Tribe, 2020).

The Orick Tower is proposed for construction on a site that NRCS soil surveys indicate would qualify as Prime Farmland. However, the site is used for cattle grazing and is not believed to be irrigated regularly, and therefore does not meet the County's designation for Prime Farmland. In addition, the proposed tower's total construction ground disturbance would be less than one-half acre. The permanent footprint of the Project would be the area within the fence (375 square feet), including parking and access road maintenance consisting of approximately 0.1 acre. The Project would convert up to one-half acre of cattle grazing land to non-agricultural use; however, the affected area represents a tiny fraction of the agricultural lands available in Humboldt County. Therefore, this impact would be less than significant, localized, and minor.

¹ GDR has met all of the necessary qualifications to be certified as a Well-Managed Forest in accordance with the Forest Stewardship Council's Principles and Criteria, and elaborated by the FSC-US Forest Management Standard (V 1.0) (Green Diamond Resource Company, 2018).

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract. *No Impact; None.*

Segments 2, 3, 4 and 5 of the Project's fiber optic cable alignment would traverse lands zoned as Agricultural Exclusive (AE), as designated by Humboldt County. However, the Project would be consistent with allowable uses as identified in the County Code, under "necessary use" and "minor utilities," and would not conflict with the existing zoning for agricultural use. The Project would not affect any land under a Williamson Act contract. Therefore, under this criterion, no impact would occur.

c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code §12220(g)), timberland (as defined in Public Resources Code §4526) or timberland zoned Timberland Production (as defined by Government Code §51104(g)). *No Impact; None.*

The Project would be consistent with the County Zoning Regulations for timberland production by "civic use types" and "essential services" (Humboldt County, 2017b). Under this criterion, no impact would occur.

d) Result in the loss of forest land or conversion of forest land to non-forest use. *No Impact; None.*

Although some vegetation removal may be required for construction and maintenance of the proposed fiber optic cable lines, which would occur primarily along roadsides, the Project would not result in any loss of forest land or conversion of forest land to non-forest uses. Although some minor vegetation removal may be required, no removal of mature trees is proposed as part of the Project's construction, operation, or maintenance. Under this criterion, no impact would occur.

e) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use. *No Impact; None.*

The majority of the Project would be constructed on non-agricultural paved roads, and the Project would only result in the conversion of a maximum of one-half acre of agricultural land, as discussed in response to question a), for the installation of the Orick Tower. Forest or tree removal is not proposed as part of the Project; therefore, no land within the Project alignment would be converted to non-forest use. Under this criterion, no impact would occur.

4.2.5 NEPA Alternatives

No-Project Alternative

Under the No-Project Alternative, the Project would not be constructed, operated, or maintained; the Project site would continue to be used as under existing conditions. Therefore, under the No-Project Alternative, no impact on agriculture and forestry resources would occur.

4.3 Air Quality

<u>Issues (and Supporting Information Sources):</u>	<u>Potentially Significant Impact</u>	<u>Less Than Significant with Mitigation Incorporated</u>	<u>Less Than Significant Impact</u>	<u>No Impact</u>
3. AIR QUALITY —				
Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.				
Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region in non-attainment under an applicable federal or state ambient air quality standard?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

This section evaluates the potential for the Project to affect both regional air quality in the North Coast Air Basin (NCAB), which comprises the Study Area for air quality, and also local air quality in the Project vicinity during construction, operation, and maintenance activities.

4.3.1 Environmental Setting

Meteorology and Climate

Air quality is affected by both the rate and location of pollutant emissions and by meteorological conditions, which influence movement and dispersal of pollutants. Atmospheric conditions such as wind speed, wind direction, and air temperature gradients, along with local topography, provide the link between air pollutant emissions and air quality.

The climate of the NCAB, which includes Humboldt, Mendocino, Trinity, and Del Norte Counties, is characterized by cool summers and mild winters with frequent fog and large amounts of rain. In the coastal areas, such as Orick, the Pacific Ocean helps to moderate temperatures year-round. Average maximum temperatures on the coast are in the high 60 degrees Fahrenheit (°F) range in the summer (e.g., July) to the low 50°F range in the winter (e.g., January) (WRCC, 2017). In inland areas, such as the vicinity of Orleans, average maximum temperatures are in the low 90°F range in the summer to the low 50°F range in the winter. Average annual rainfall in the Study Area ranges from 67 inches in Orick to 51 inches in Orleans (WRCC, 2017). Approximately 90 percent of the annual precipitation falls between October and April. Winds across Humboldt County are primarily out of the northwest to north-northwest in the spring and summer months, out of the southeast during the winter months, and predominantly out of the north, with a slight component from the southeast during the fall months (Humboldt County, 2017a).

Humboldt County commonly experiences two types of atmospheric inversions¹ or limits to air movement patterns, vertical and horizontal, that affect the vertical depth and/or width of the atmosphere through which pollutants can be mixed and dispersed. The greater the vertical depth and/or horizontal width that pollutants can be mixed in the atmosphere, the lower the concentrations of the pollutants. Vertical air movement is important in spreading pollutants through a thicker layer of air, which reduces pollutant concentrations. Horizontal movement is important in spreading pollutants over a wider area, which also reduces pollutant concentrations. Upward dispersion of pollutants is hindered wherever the atmosphere is stable, that is, where warm air overlies cooler air below. Radiation inversion occurs when the air layer near the surface of the ground cools and may extend upward several hundred feet (Humboldt County, 2017a).

Radiation inversions in Humboldt County can be found in the night and early mornings almost daily, but are more prominent from late fall to early spring when there is less sunlight and the weather is cooler. Radiation inversion tends to last longer into the morning during the winter months than in the summer. Subsidence inversion is caused by downward-moving air aloft, which is common in the area of high pressure along and off the coast. As it descends, the air warms at a rate of 5.5°F per 1,000 feet; thus, it arrives at a lower height warmer than the air just below and limits the vertical mixing of air. Subsidence inversion often affects a large area and is more common during the summer months. This inversion, which usually occurs from late spring through early fall, can be very strong and shallow, given the cooling of the lower layers from the cool ocean water (Humboldt County, 2017a).

Criteria Air Pollutants

The U.S. Environmental Protection Agency (EPA) has identified criteria air pollutants and has set national ambient air quality standards (NAAQS) for widespread pollutants from numerous and diverse sources that are a threat to public health and welfare. EPA has set NAAQS for seven principal pollutants, which are called “criteria” pollutants:

- Ozone.
- Nitrogen dioxide (NO₂).
- Carbon monoxide (CO).
- Lead.²
- Particulate matter less than or equal to 10 microns in diameter (PM₁₀).
- Particulate matter less than or equal to 2.5 microns in diameter (PM_{2.5}).
- Sulfur dioxide (SO₂).

The State of California has established California ambient air quality standards (CAAQS) for these criteria pollutants, as well as ambient air quality standards for sulfates, hydrogen sulfide, and vinyl chloride. The criteria pollutants that would be generated by the Project are described below.

¹ Inversions limit air movement, causing stagnation and concentration of pollutants. Air movement disperses pollutants, lowering concentrations.

² Lead would not be generated by the Project and thus is not discussed further.

Ozone

Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and that can cause substantial damage to vegetation and other materials. Ozone is not emitted directly into the atmosphere, but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving volatile organic compounds (VOC) and oxides of nitrogen (NO_x). VOC and NO_x are known as precursor compounds for ozone. Substantial ozone production generally requires ozone precursors to be present in a stable atmosphere with strong sunlight for approximately three hours.

Ozone is a regional air pollutant because it is not emitted directly by sources, but is formed downwind of sources of VOC and NO_x under the influence of wind and sunlight. Ozone concentrations tend to be higher in the late spring, summer, and fall, when conditions, such as long sunny days and regional subsidence inversions, are conducive to the formation and accumulation of secondary photochemical compounds.

According to EPA, ozone can cause the muscles in the airways to constrict, potentially leading to wheezing and shortness of breath (EPA, 2019). Ozone can make it more difficult to breathe deeply and vigorously; cause shortness of breath and pain when taking a deep breath; cause coughing and a sore or scratchy throat; inflame and damage the airways; aggravate lung diseases such as asthma, emphysema, and chronic bronchitis; increase the frequency of asthma attacks; make the lungs more susceptible to infection; continue to damage the lungs even when the symptoms have disappeared; and cause chronic obstructive pulmonary disease (EPA, 2019). Long-term exposure to ozone is linked to aggravation of asthma, and is likely to be one of many causes of asthma development and long-term exposures to higher concentrations of ozone may also be linked to permanent lung damage, such as abnormal lung development in children (EPA, 2019).

Inhalation of ozone causes inflammation and irritation of the tissues lining human airways, causing and worsening a variety of symptoms, and exposure to ozone can reduce the volume of air that the lungs breathe in and cause shortness of breath (CARB, 2019). The people most at risk from breathing air containing ozone include people with asthma, children, older adults, and people who are active outdoors, especially outdoor workers (EPA, 2019). Children are at greatest risk from exposure to ozone because their lungs are still developing and they are more likely to be active outdoors when ozone levels are high, which increases their exposure (EPA, 2019). Studies show that children are no more or less likely to suffer harmful effects than adults; however, children and teens may be more susceptible to ozone and other pollutants because they spend nearly twice as much time outdoors and engaged in vigorous activities compared to adults (CARB, 2019). Children breathe more rapidly than adults and inhale more pollution per pound of their body weight than adults and are less likely than adults to notice their own symptoms and avoid harmful exposures (CARB, 2019).

Nitrogen Dioxide

Nitrogen dioxide is an air quality pollutant of concern because it acts as a respiratory irritant. NO₂ is a major component of the group of gaseous nitrogen compounds commonly referred to as oxides of nitrogen (NO_x). A precursor to ozone formation, NO_x is produced by fuel combustion

in motor vehicles, industrial stationary sources (such as industrial activities), ships, aircraft, and rail transit. Typically, NO_x emitted from fuel combustion is in the form of nitric oxide and NO_2 . Nitric oxide is often converted to NO_2 when it reacts with ozone or undergoes photochemical reactions in the atmosphere. NO_2 can potentially irritate airways in the human respiratory system (EPA, 2016). Short-term exposures can aggravate respiratory diseases, particularly asthma, leading to respiratory symptoms (such as coughing, wheezing or difficulty breathing), hospital admissions, and visits to emergency rooms. Longer exposures to elevated concentrations of NO_2 may contribute to the development of asthma and potentially increase susceptibility to respiratory infections.

Carbon Monoxide

Carbon monoxide is a nonreactive pollutant that is a product of incomplete combustion and is mostly associated with motor vehicle traffic. High CO concentrations develop primarily during winter when periods of light winds combine with the formation of ground-level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the blood's oxygen-carrying capacity. This reduces the amount of oxygen that can reach the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia.

Particulate Matter

Particulate matter less than 10 microns in diameter and less than 2.5 microns in diameter (PM_{10} and $\text{PM}_{2.5}$, respectively) represent fractions of particulate matter that can be inhaled into air passages and the lungs and can cause adverse health effects. Particulate matter in the atmosphere results from many kinds of dust- and fume-producing industrial and agricultural operations, fuel combustion, and atmospheric photochemical reactions. Some sources of particulate matter, such as demolition and construction activities, are more local, while others, such as vehicular traffic, have a more regional effect.

Particulates can damage materials and reduce visibility. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain adsorbed gases (e.g., chlorides or ammonium) that may be injurious to health. According to a study by the California Air Resources Board (CARB), the estimated number of annual $\text{PM}_{2.5}$ -related premature deaths in California is 9,200 (CARB, 2010). A large body of scientific evidence indicates that both long-term and short-term exposure to $\text{PM}_{2.5}$ can cause a wide range of health effects (e.g., aggravating asthma and bronchitis, causing visits to the hospital for respiratory and cardiovascular symptoms, and contributing to heart attacks and deaths) (CARB, 2020a).

Sulfur Dioxide

Sulfur dioxide is a colorless acid gas with a pungent odor. It has potential to damage materials and it can have health effects at high concentrations. It is produced by the combustion of sulfur-containing fuels, such as oil, coal, and diesel. SO_2 can irritate lung tissue and increase the risk of acute and chronic respiratory disease.

Toxic Air Contaminants

Toxic air contaminants (TACs) are airborne substances that are capable of causing short-term (acute) and/or long-term (chronic or carcinogenic, i.e., cancer-causing) adverse human health effects (i.e., injury or illness). TACs include both organic and inorganic chemical substances. They may be emitted from a variety of common sources including gasoline stations, automobiles, dry cleaners, industrial operations, and painting operations. The current California list of TACs includes nearly 200 compounds, including diesel particulate matter (DPM) emissions from diesel-fueled engines (CARB, 2011).

Existing Air Quality

The North Coast Unified Air Quality Management District (NCAQMD) is the local air district in the Study Area responsible for air quality. NCAQMD includes Del Norte, Humboldt, and Trinity Counties. Ambient air quality measurements from air monitoring stations maintained by NCAQMD help to determine the level of air quality in the local area. The closest air quality monitoring station to the Project location is the Eureka-Jacobs station, approximately 24 miles south of the southern end of proposed fiber Segment R5. **Table 4.3-1** shows the five-year (2015 through 2019) summary of available ozone, NO₂, PM₁₀, and PM_{2.5} data monitored at the Eureka-Jacobs station. The data are compared to the CAAQS and NAAQS.

**TABLE 4.3-1
AIR QUALITY DATA SUMMARY (2015–2019) FOR THE STUDY AREA**

Pollutant	Standard	Monitoring Data by Year				
		2015	2016	2017	2018	2019
Ozone						
Highest 1-Hour Average (ppm)		0.05	0.05	0.06	0.05	0.05
Days over State Standard	0.09	0	0	0	0	0
Highest 8-Hour Average (ppm)		0.045	0.045	0.059	0.041	0.049
Days over National Standard	0.070	0	0	0	0	0
Nitrogen Dioxide (NO₂)						
Highest 24-Hour Average (µg/m ³)		0.026	0.048	0.022	0.058	0.028
Days over State Standard	0.100	0	0	0	0	0
Respirable Particulate Matter (PM₁₀)						
Highest 24-Hour Average (µg/m ³)*		55	54	114	71	49
Estimated Days over National Standard	150	0	0	**	0	0
National Annual Average (µg/m ³)	20	18.0	16.1	17.4	18.6	15.1
Fine Particulate Matter (PM_{2.5})						
Highest 24-Hour Average (µg/m ³)		19	20	49	40	19
Estimated Days over National Standard	35	0	0	3	6	0
State Annual Average (µg/m ³)	12	6	6	**	8	**

NOTES: µg/m³ = micrograms per cubic meter; ppm = parts per million

* State PM₁₀ air quality data are not available for the Eureka-Jacobs station.

** Insufficient data are available to determine the value or not applicable.

SOURCE: CARB, 2020b.

As shown in Table 4.3-1, the 24-hour national PM_{2.5} standard was estimated to have been exceeded three times in 2017 and six times in 2018 during the five-year study period. There were no other identified exceedances of any of the standards during the five-year study period.

Humboldt County is classified as a nonattainment area for the state PM₁₀ ambient air quality standards. It is classified as either attainment or unclassified for all the other state and federal ambient air quality standards.

Sensitive Receptors

For the purposes of this air quality analysis, *sensitive receptors* are generally defined as facilities or land uses that include members of the population who are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples include schools, hospitals, and daycare centers. The reasons for greater than average sensitivity include preexisting health problems, proximity to emissions sources, and/or duration of exposure to air pollutants. Schools, hospitals, and convalescent homes are considered relatively sensitive to poor air quality because children, elderly people, and the infirm are more susceptible to respiratory distress and other air quality–related health problems than the general public. Residential areas are considered sensitive to poor air quality because people usually stay home for extended periods of time, which results in greater exposure to ambient air quality. Below are descriptions of the sensitive receptors in the vicinity (within 1,000 feet) of the Project alignment segments and sites.

Segment 1

Sensitive receptors in the vicinity of Segment 1 include residences mostly in the vicinity of Orleans and Weitchpec, and Orleans Elementary School and Head Start in Orleans. The closest residence is approximately 40 feet from this segment alignment and Orleans Elementary School and Head Start are directly adjacent to the alignment. There are no sensitive receptors in the vicinity of the existing Orleans Mountain radio repeater site or Antenna Ridge site.

Segment 2

Sensitive receptors in the vicinity of Segment 2 include residences in Weitchpec and Martin’s Ferry, along Cappel Road and McKinnon Hill Road, and near Johnsons. The closest residence is approximately 50 feet from this segment alignment. Weitchpec Yurok Magnet School in Weitchpec, Kepel Early Head Start and Head Start on McKinnon Hill Road, and Jack Norton Elementary School in Johnsons are directly adjacent to the Segment 2 alignment. There are no sensitive receptors within 1,000 feet of the existing McKinnon Hill or Miners tower sites.

Segment 3

There are no sensitive receptors in the immediate vicinity of Segment 3. The closest sensitive receptor is a residence approximately 400 feet from this segment alignment off Bald Hills Road. There are no sensitive receptors within 1,000 feet of the existing Wiregrass Tower site.

Segment 4

Sensitive receptors in the vicinity of Segment 4 include residences in Orick. The closest residence is approximately 50 feet from this segment alignment. Orick Elementary School in Orick is approximately 100 feet from the Segment 4 alignment. The closest sensitive receptor to the proposed Orick Tower site is approximately 500 feet to the north of the site.

Segment 5

Sensitive receptors adjacent to Segment 5 include residences in the vicinity of Orick, Fieldbrook, and McKinleyville. The closest single-family residence is located approximately 20 feet from the Segment 5 alignment.

4.3.2 Regulatory Framework

For a discussion of federal, state and local regulations that are relevant to the Project see Appendix F.

4.3.3 Applicant Proposed Measures

The following Applicant Proposed Measures (APMs) related to air quality have been included as part of the Project:

- **APM AIR-1:** Fugitive dust produced during construction will be controlled with watering as needed. Watering will only settle the dust and will not create runoff.
- **APM AIR-2:** Trucks and heavy equipment used during construction of this Project will meet California Air Resources Board standards for air pollution control for their model year.

4.3.4 Environmental Impacts and Mitigation Measures

Approach to Analysis

The NCUAQMD Board has not formally adopted any CEQA thresholds of significance for criteria pollutants; however, district staff has recommended that CPUC consider using NCUAQMD's BACT emission thresholds for stationary sources as defined and listed in NCUAQMD Rule 110 (see Section 4.3.2), to evaluate short-term construction and long-term operation impacts of a project (Davis, pers. comm., 2018). Therefore, CPUC has elected to use NCUAQMD's daily best available control technology (BACT) emission thresholds to evaluate the significance of emissions of CO, NO_x, PM₁₀, PM_{2.5}, and reactive organic gases (ROG) that would be associated with the Project (Table 4.3-3). The Project would generate miniscule amounts of fluorides, hydrogen sulfide, lead, reduced sulfur compounds, oxides of sulfur, sulfuric acid mist, or total reduced sulfur compounds; therefore, these emissions are not evaluated in this ISMND/EA.

NCUAQMD also does not have any CEQA thresholds of significance for health risk associated with TACs; however, health risk impacts associated with the Project are evaluated using screening criteria identified in the most recent version of the California Office of Environmental Health Hazard Assessment's Air Toxics Hot Spots Program Risk Assessment Guidelines (OEHHA, 2015).

Impact Discussion

- a) **Conflict with or obstruct implementation of the applicable air quality plan.**
No Impact; None.

No air quality plan is applicable to the Project. Therefore, under this criterion, no impact would occur.

- b) **Result in a cumulatively considerable net increase of any criteria pollutant for which the Project region in non-attainment under an applicable federal or state ambient air quality standard. Less than Significant; Short-term; Localized; Minor.**

Construction

Construction of the Project would occur over a period of approximately 19 months; however, the Project's use of heavy-duty construction equipment and vehicles and associated generation of emissions would be primarily limited to a 12-month period when fiber would be installed and the Orick Tower would be constructed. Construction activities associated with the Yurok signal connection, connection to service providers, and last-mile service installations would not require the use of heavy-duty construction equipment or vehicles. Exhaust emissions would result from construction equipment and from truck and automobile trips generated by construction activities. Fugitive dust emissions would result from earthwork activities and vehicles traveling on roadways that would cause particulates to become airborne and entrained in the atmosphere. Emissions levels for the various construction activities may vary from day to day with the type of equipment, duration of use, operation schedules, and size of the construction labor force.

As part of CPUC's Permit to Construct application process, the Applicant provided calculations of construction-related air pollutant emissions and estimates for the construction activities that would be associated with the Project (see PEA Appendix A [Karuk Tribe, 2020]). The emissions were estimated by the Applicant's consultant, using calculation spreadsheets that employ calendar year 2017 exhaust emission factors for off-road equipment and on-road vehicles that were developed for the South Coast Air Quality Management District in Southern California, as well as other emissions factors and methods identified by EPA, CARB, and other sources.

To estimate daily Project construction emissions, the Applicant identified the types and horsepower of construction equipment that would be required, as well as the total use hours for each type. Daily emissions from construction equipment were calculated using average daily use hours for each type of equipment. These hours were estimated by dividing the total work hours by the total construction workdays (i.e., 418 workdays). On-road vehicle emissions were estimated assuming that an average of 9.6 automobile round trips for worker commutes and site support would result in 365 vehicle miles traveled (VMT) each workday, and that an average of 2.4 round trips by medium-duty delivery trucks to and from the Project sites would result in 165 VMT each workday. Fugitive dust emissions were estimated for on-site soil disturbance and for travel on paved road surfaces using a variety of methods and emissions factors. Refer to Appendix A of the PEA (Karuk Tribe, 2020) for more details about the Applicant's construction emissions estimates.

The Applicant's emissions calculations and associated assumptions were independently reviewed as part of this analysis. The majority of the assumptions and methods that were used to estimate

the Applicant's emissions were found to be technically adequate; however, they are based on emissions factors generated for equipment and vehicle inventories conducted in 2017 for the South Coast Air Basin, which is in the Los Angeles area.

In addition, the Applicant's daily emissions estimates are based on average equipment-use hours developed under the assumption that construction activities would occur over a period of 19 months, or 418 workdays. However, subsequent to the release of the PEA, the Applicant clarified that its emissions estimates focused on activities associated with proposed fiber installation and construction of Orick Tower, which would occur over a 12-month period (Karuk Tribe, 2018). The estimate did not include emissions from construction activities for the Yurok signal connection, connection to service providers, and last-mile service installations because those activities would not require the use of heavy-duty construction equipment or vehicles and would only generate minor emissions associated with commuting workers.

Therefore, with all other assumptions the same, applying a total-workdays value to model average daily emissions based on a 19-month construction period (as opposed to a 12-month construction period) would underestimate the average daily construction emissions.

Because the Project would be constructed in Humboldt County starting in 2021, and because on-site use of heavy-duty construction equipment would occur over a time frame of 12 months, the daily emissions were re-modeled using 264 workdays to represent 12 months of construction. The updated modeling used the same total equipment-use hours and vehicle trip assumptions, but with consideration for the Project's location and construction start date in 2021, using the California Emissions Estimator Model (CalEEMod), version 2013.3.2 (ESA, 2020).

In addition, the Applicant's estimates of on-site fugitive dust include a control efficiency of 80 percent associated with watering and vehicle speed limit dust controls; however, only watering has been proposed (see APM AIR-1), which would not guarantee a 90 percent limit, and NCUAQMD does not have a vehicle speed limit requirement to control fugitive dust. Therefore, on-site fugitive dust emissions were revised based on the CalEEMod default control efficiency of 55 percent for watering twice daily (ESA, 2020).

Finally, to more accurately evaluate Project construction of the Project as presented in the PEA, daily emissions associated with off-site construction-related vehicle trips were revised to reflect 13 total daily automobile round trips by workers and support staff, resulting in a total of 884 VMT, and eight round trips by medium- and heavy-duty trucks, resulting in a total of 544 VMT. See the Air Quality and Greenhouse Gas Supplement in Appendix B for the CalEEMod emissions summary and output sheets, as well as the revised estimates of on-site fugitive dust emissions.

Table 4.3-2 presents the estimated peak daily construction emissions associated with the Project. These emissions would be dispersed throughout the Study Area in Humboldt County. As

described in Section 2.3.1³, the alignment for Segment 5 that is evaluated within this ISMND/EA is approximately 1 mile shorter and includes approximately 21 miles less underground installation than the previously proposed Segment 5 (Karuk Tribe, 2020). This would likewise result in less air pollutant emissions because of the reduced use of construction equipment required to install the fiber line overhead on existing poles rather than installing the fiber line underground. Because the Applicant’s emissions estimates reflect the previously proposed Segment 5 alignment, the actual Project construction emissions with Segment 5 as currently proposed would be less than those reflected in Table 4.3-2.

**TABLE 4.3-2
 PROJECT DAILY CONSTRUCTION EMISSIONS (POUNDS PER DAY)**

Emissions Source	ROG	NOx	CO	PM ₁₀	PM _{2.5}
Off-Road Equipment Exhaust	1.47	13.38	11.51	0.81	0.75
On-Road Vehicle Exhaust	0.66	6.30	4.69	0.04	0.04
On-Site Fugitive Dust	–	–	–	10.59	2.22
Off-Site Fugitive Dust	–	–	–	1.15	0.31
Total Daily Emissions	2.13	19.67	16.20	12.60	3.32
Significance Thresholds	50	50	500	80	50
Significant Impact	No	No	No	No	No

NOTES: CO = carbon monoxide; NO_x = oxides of nitrogen; PM₁₀ = particulates of 10 microns or less; PM_{2.5} = particulates of 2.5 microns or less; ROG = reactive organic gases

SOURCES: ESA, 2020 (see Appendix B of this ISMND/EA); Karuk Tribe, 2020: PEA Appendix A.

As shown in Table 4.3-4, the estimated mass emissions would not exceed any significance thresholds. Humboldt County is classified as a nonattainment area for the state PM₁₀ ambient air quality standards. An exceedance of the project-specific threshold for PM₁₀, or for any of the other criteria pollutants or ozone precursors set forth in Table 4.3-4, would indicate that a project would result in a cumulatively considerable net increase in criteria pollutant emissions. As described above, the short-term construction emissions would not be cumulatively considerable. Therefore, construction emissions generated by the Project would not be expected to result in a cumulatively considerable net increase of any criteria pollutant for which the Project region is nonattainment under an applicable federal or state ambient air quality standard, and the associated impact would be less than significant, localized, and minor.

Operations and Maintenance

The only new stationary source of air pollution associated with the Project would be a backup propane generator at the Orick Tower site. The generator would be approximately 15 horsepower and would run 12 minutes a day once a week, for a total of 10.4 hours per year, for maintenance

³ To reduce environmental impacts and installation costs, between the initial and subsequent submittals of the Proponent’s Environmental Assessment (PEA), the Applicant changed the proposed location of the connection from Orick to the larger broadband network. The amended PEA (submitted to CPUC in May 2020) refers to the currently proposed alignment of Segment 5 as Segment R5 (as revised) to distinguish it from the originally proposed alignment. In this document, the term *Segment 5* refers to the alignment and endpoint for this segment, as currently proposed.

purposes. Based on these assumptions, it was determined that routine operation of the proposed backup generator would emit much less than 1 pound per day of each of the criteria pollutants and ozone precursors (Karuk Tribe, 2020: PEA Appendix A), considerably less than the daily significance thresholds. The Project would also include replacement of existing backup generators at each of the three Yurok wireless tower locations; however, the replacement generators would operate similarly to, but more efficiently than, the existing backup generators, resulting in no new net emissions compared to baseline conditions.

Mobile-source emissions during Project operation would occur during worker vehicle trips to conduct routine annual visual inspections of system components, electrical switches, and other components. Similar to the backup generator emissions, the mobile-source emissions associated with Project operation would be less than 1 pound per day for each of the criteria pollutants and ozone precursors, which would not exceed the significance thresholds. Therefore, criteria pollutant emissions generated by Project operations and maintenance would not cause a cumulatively considerable net increase of any criteria pollutant for which the Project region is non-attainment under an applicable federal or state ambient air quality standard. Impacts would be less than significant, localized, and minor.

Mitigation: None required.

Project Contribution to Cumulative Health Effects

No single project by itself would be sufficient in size to result in regional nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulative adverse air quality impacts; and while its emissions may be individually limited, it could be cumulatively considerable when taken in combination with past, present, and future development projects. The project-level thresholds for criteria air pollutants are based on levels at which new sources are not anticipated to contribute to an air quality violation or result in a considerable net increase in criteria air pollutants. Therefore, if a project leads to a significant impact individually, the project would also be considered to contribute significantly to the cumulative impact.

A CEQA air quality analysis of criteria air pollutants is based on significance thresholds that were set at emissions levels tied to the region's attainment status (SJVAPCD, 2014). For this Project, CPUC has elected to use NCUAQMD's daily BACT emission thresholds to gauge significance. The BACT emission thresholds were developed to ensure that projects would not interfere with the attainment or maintenance status of ambient air quality standards. Specifically, the BACT emission levels determine which stationary air pollutant sources permitted by NCUAQMD (typically, industrial facilities, refineries, and the like) must offset their emissions by purchasing emissions "offsets" from other facilities that have reduced emissions, either through installation of emissions controls or removal of an emissions source. Such offset levels allow for regional development while keeping the cumulative effects of new sources at a level that would not impede attainment of the ambient air quality standards. Therefore, this analysis of criteria air pollutants is essentially an analysis of regional, cumulative air quality impacts and the Project's contribution to those impacts.

The health effects associated with emissions of criteria pollutants are described in Section 4.3.1. As described in Appendix F, compliance with the ambient air quality standards indicates that regional air quality can be considered protective of public health. The ambient air quality standards are expressed in terms of the concentrations of individual pollutants in the air. With certain exceptions, given current air quality modeling tools, calculating an individual project's effect on ambient pollutant concentrations does not yield information that is accurate enough to be useful.

In addition, for projects that produce emissions for two years or less, this analysis is not meaningful because quantities of emissions are too small to have a statistically significant effect on health outcomes. Exceptions include CO, which is directly emitted from tailpipes and the concentration of which can be calculated near locations such as high-volume intersections, where CO concentrations are typically highest. However, CO emissions and concentrations have decreased dramatically in California in the nearly 45 years since introduction of the catalytic converter. Accordingly, modeling of CO concentrations is seldom required.

Another exception is fine particulate matter. Concentrations of PM_{2.5} exhaust can be used as a proxy for DPM in a health risk assessment, which is a separate type of air quality analysis from the criteria pollutants discussed herein (see impact criterion d discussion, below).

Ozone, however, is a regional pollutant for which modeling of project-specific concentrations is not reliable, given current modeling limitations. Because of the complexity of ozone formation and the nonlinear relationship of ozone concentration with its precursor gases, and given the state of environmental science modeling in use at this time, it is infeasible to convert specific mass emissions levels (i.e., weight) of NO_x or ROG emitted in a particular area (or by a particular project) to a particular concentration of ozone in that area (SJVAPCD, 2014). Meteorology, the presence of sunlight, seasonal impacts, and other complex chemical factors all combine to determine the ultimate concentration and location of ozone (SCAQMD, 2014; SJVAPCD, 2014). Furthermore, available models are designed to determine regional, population-wide health impacts from long-term emissions sources and cannot accurately quantify ozone-related health impacts caused by NO_x or ROG emissions from the local level, and in particular, not at the level of an individual project's construction emissions that last for less than two years.

As a result, project-level mass (weight) emission thresholds have been established for ozone precursors (NO_x and ROG) and PM₁₀ precisely because it is not possible to readily convert mass emissions at the project level to regional pollutant concentrations. NCUAQMD's thresholds for ROG, NO_x, PM₁₀, and PM_{2.5} are tied to the offset requirements for ozone precursors and particulate matter to protect against the deterioration of ambient air quality that could cause nonattainment of ambient air quality standards, which would be a regionally cumulative significant impact. As explained above, attainment can be considered protective of public health, thus providing a strong link between a mass emission threshold and avoidance of health effects. These thresholds provide a connection between a mass emission threshold and avoidance of health effects.

The Project would not exceed the significance thresholds for construction-related or operational emissions. Therefore, the contribution of the Project to cumulative, regional air quality impacts related to ozone precursors and criteria pollutants would not be considerable, and the Project's

contribution to any cumulative air quality impacts would not be significant. As explained above, because the significance thresholds are linked to the avoidance of health effects, the Project would not be anticipated to result in an adverse health effect with respect to emissions of ozone precursors or criteria pollutants. Impacts would be less than significant, localized, and minor.

c) Expose sensitive receptors to substantial pollutant concentrations. *Less than Significant; Short-term; Localized; Minor.*

Construction

Diesel particulate matter was identified as a TAC by CARB in 1998. Construction of the Project would result in temporary, short-term generation of DPM emissions from the use of off-road diesel equipment and from deliveries of construction materials and debris hauling using on-road heavy-duty trucks.

The dose to which receptors are exposed is the primary factor affecting health risk from TACs. Dose is a function of the concentration of a substance or substances in the environment and the duration of exposure to the substance. According to the California Office of Environmental Health Hazard Assessment (part of the California Environmental Protection Agency), health risk assessments, which determine the exposure of sensitive receptors to TAC emissions, should be based on 9-year, 30-year, and/or 70-year exposure periods when assessing TACs (such as DPM) that have only cancer or chronic non-cancer health effects. However, such health risk assessments should be limited to the duration of the emissions-producing activities associated with the project, unless the activities occur for less than six months. Activities that would last more than two months but less than six months should be evaluated as if they would last for six months. The Office of Environmental Health Hazard Assessment does not recommend assessing cancer risk for projects lasting less than two months at the maximum exposed individual resident (OEHHA, 2015).

The Project components that would take the longest to construct and would be closest to sensitive receptors would be the proposed fiber installations along all segments, as well as the last-mile service installations, which would last for approximately 12 months and six months, respectively. However, construction along these alignments would proceed at a linear pace and would not be expected to expose any one receptor along the segments for longer than two to three weeks. The total emissions and duration of exposure at any one sensitive receptor location for the fiber installations and last-mile service installation construction would be relatively minor compared to the exposure periods used in health risk assessments. Likewise, the proposed construction of the Orick Tower and at the existing Orleans Mountain radio repeater and Antenna Ridge sites that would make up the Yurok signal connection would last up to one month and would result in minor TAC exposure at the nearest sensitive receptors. Therefore, the health risk from the short-term DPM emissions associated with construction of the Project components would be insignificant, and the impact would be less than significant, localized, and minor.

Operation and Maintenance

The only potential source of DPM emissions associated with operation and maintenance would be light-duty trucks used for worker vehicle trips to conduct routine annual visual inspections of the system components, electrical switches, and other components. These DPM emissions would be

dispersed along roadways in Humboldt County and would result in a minor exposure risk at nearby sensitive receptors.

The only new stationary source of air pollution associated with the Project would be a backup generator at the Orick Tower site that would be fueled with propane, which is considered a “clean” burning fuel because it does not produce visible emissions (EPA, 2008). The generator would be approximately 15 horsepower and would run 12 minutes a day once a week, for a total of 10.4 hours per year. At this rate, the generator would only consume up to a half gallon of propane each week, and approximately 21 gallons per year. At a distance of 500 feet from the nearest residence, routine operations of the backup generator would pose a less-than-significant health risk to the local community. The Project also includes replacement of existing backup generators at each of the three Yurok wireless tower locations; however, the replacement generators would operate similarly to, but more efficiently than, the existing backup generators, which would result in no new net emissions compared to baseline conditions. Accordingly, long-term sources of TACs would be minimal. Therefore, sensitive receptors would not be exposed to substantial pollutant concentrations, and impacts would be less than significant, localized, and minor. Nonetheless, the Applicant would be required to obtain a permit from NCUAQMD to construct and operate the new and replacement backup generators.

Mitigation: None required.

d) Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people. *Less than Significant; Short-term; Localized; Minor.*

Operation and maintenance of the Project would not create odorous emissions. However, Project construction would include sources, such as diesel equipment, that could create objectionable odors. Because construction activities would be temporary and spatially dispersed, and any associated odors would dissipate quickly from the sources, these activities would not affect a substantial number of people. Therefore, impacts from odors generated by construction of the Project would be less than significant and minor.

Mitigation: None required.

4.3.5 NEPA Alternatives

No-Project Alternative

Under the No-Project Alternative, the Project would not be constructed, operated and maintained, or decommissioned and internet services would generally continue as under existing conditions. Therefore, under the No-Project Alternative, no impact on air quality would occur.

4.4 Biological Resources

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporation</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
4. BIOLOGICAL RESOURCES— Would the Project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Have a substantial adverse effect on federally or state protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

This section describes and assesses the Project’s potential to result in significant adverse environmental impacts on special-status plants and wildlife, sensitive vegetation communities, and wetland resources in the Project area, defined as within one-half mile of the Project alignment (see **Figure 4.4-1**), including those within the *Project footprint*, defined as the immediate Project disturbance area. The terrain and habitats in the Project footprint vary for each segment of the Project. This section discusses the vegetation communities present in the Project vicinity and special-status species with the potential to occur in the Project vicinity.

4.4.1 Environmental Setting

Regional Setting

The Project would be located in the Klamath/North Coast Bioregion, as defined by the State of California’s Natural Communities Conservation Program.¹ This bioregion includes all of

¹ A *bioregion* is an area defined by a combination of ecological, geographic, and social criteria and consists of a system of related interconnected ecosystems. The Klamath/North Coast bioregion includes the Lost Coast area, the North Coast Ranges, the Klamath, Siskiyou, Marble, and Salmon Mountains, the Trinity Alps, and part of the Cascade Range. Major rivers include the Eel, Trinity, Klamath, Russian, Smith, Salmon, Scott, Mad, and Mattole Rivers. The largest lakes include Clear Lake, Whiskeytown Lake, Clair Engle, and the western part of Shasta Lake (Skinner et al., 2006).

Mendocino, Lake, Humboldt, and Del Norte Counties and the western portions of Yolo, Colusa, Glenn, Tehama, Shasta, and Siskiyou Counties. The Klamath/North Coast Bioregion has a Mediterranean climate and is the wettest climate in California, characterized by cool, moist, often foggy winters with dry, warm summers. Summer fog mediates the hot summer temperatures where it occurs near the coast and provides an important source of moisture during the driest portion of the year, influencing the density and diversity of vegetation.

The rugged, complex topography and resultant intermixing vegetation of the Klamath/North Coast Bioregion contains three general ecological zones: Lower Montane, Mid-to-Upper Montane, and Sub-Alpine. Conifer forests and woodlands are found in all elevation zones throughout this bioregion.

Project Setting

The Project would be located in northern Humboldt County, traversing terrain from the coastline near McKinleyville to Orick, east through mountains to Orleans (Chapter 2, Figure 2-1). The Project would be located in the mid and lower Klamath River and lower Redwood Creek watersheds, and the Little River watershed. Several lagoons (Freshwater, Stone, and Big) lie within the Project Area. Within one-half mile of the Project alignment are 13 national, state, and regional parks.

Vegetation Communities

This section describes the vegetation communities and habitats present within the Project area. When possible, the vegetation community descriptions and terminology used are based on *A Manual of California Vegetation* (Sawyer et al., 2009), the California Department of Fish and Wildlife's (CDFW's) *List of California Terrestrial Natural Communities Recognized by The California Natural Diversity Database* (CDFW, 2020a) and the *Preliminary Description of Terrestrial Natural Communities of California* (Holland, 1986). *Vegetation communities* are assemblages of plant species that occur together in the same area, and are defined by species composition and relative abundance.

Habitat types occurring within the Project area were derived from review of satellite imagery, the PEA (Karuk Tribe, 2020), and direct observations by biologists during site visits in 2015 and 2018.

Terrestrial

The majority of the Project alignment is located within conifer-dominated forests. More than 70 percent of the alignment has been previously harvested for timber (early to mid-seral upland or second- or third-growth forest habitat). Areas with uncut late-seral and old-growth forest habitat occur in patches in Six Rivers National Forest (SRNF) and Redwood National Park (RNP) land (see Figure 4.4-1).

Developed Habitats

Developed habitats include paved landscapes (parking lots and roads); previously disturbed areas (dirt roads, ditches, and roadsides); rural residential, agricultural, or orchard lands; and clear-cut conifer stands. Replanted young conifer stands are scattered within the Klamath River and

Redwood Creek watersheds as a result of recent logging activity. Rural residential lands in the area support agricultural and orchard habitats.

Douglas-fir Mixed Hardwood

Douglas-fir mixed hardwood habitat is the dominant vegetation community in the interior of the Project alignment. Douglas-fir (*Pseudotsuga menzezeii*) and tanoak (*Notholithocarpous densiflorus*) occur in drier habitats along the alignment, along the Klamath River to Johnsons and east from Weitchpec to Orleans along Segment 1. The stands are often disturbed, from both timber harvest and wildfire.

Oak Savannah Grassland/Prairie

Oak savannah grassland/prairie habitat occurs along the Bald Hills portion of the alignment along Segments 3 and 4. The dominant plant species observed in these areas include black oak (*Quercus kelloggii*), both scattered and sometimes in larger stands, throughout open grasslands of primarily nonnative species. Douglas-fir and coast redwood (*Sequoia sempervirens*) can be found along the boundaries of this habitat.

Coast Redwood

Coast Redwood habitat, a sensitive community, occurs west of Weitchpec along Segments 3, 4, and 5, and consists mainly of younger, second-growth trees. Within RNP in Segment 4 are concentrations of old-growth trees, some located in the Redwood Creek watershed, where there are known nesting colonies of marbled murrelets. Timberlands managed by Green Diamond Resource Company (GDR) in Segment 5 are a patchwork of mostly early and mid-seral second- or third-growth redwood stands.

Riparian Scrub

Riparian scrub (Palustrine Scrub–Shrub Wetland, a sensitive community) occurs along the Klamath River, Little River, and portions of Redwood Creek. This habitat type occurs in “islands” next to the low-flow channels. Portions of this habitat are inundated every winter during high river flows. The Mixed Willow Series dominates the vegetation growing within the riparian scrub habitat. The understory is minimal and consists of weedy annual grasses and forbs. Deciduous wetland species include narrow-leaved willow (*Salix exigua*), Pacific or shiny willow (*S. lucida*), red willow (*S. laevigata*), red alder (*Alnus rubra*), black cottonwood (*Populus* spp.), biGEO-leaved maple (*Acer macrophyllum*), coast redwood, and Douglas-fir. The understory consists of thimbleberry (*Rubus parviflorus*), elderberry (*Sambucus* spp.), coyote brush (*Baccharis pilularis*), poison hemlock (*Conium maculatum*), and Himalayan blackberry (*Rubus armeniacus*), with minimal weedy annual grasses and forbs.

Mature Willow/Cottonwood Gallery Forest

Mature willow/cottonwood gallery forest habitat, a sensitive community, occurs along the lower reaches of Redwood Creek, near the junction of Segments 4 and 5. This habitat type is uncommon, as most riparian habitat is not mature enough to have developed a multi-layered canopy and the large cottonwood trees characteristic of this habitat community.

Aquatic

The Project alignment crosses several major rivers and various creeks in the mid and lower Klamath River and Redwood Creek watersheds. Together, these watersheds drain more than 100 square miles in Humboldt County and provide a significant amount of habitat for salmonid species, including steelhead, Chinook, and coho salmon, supporting some of the largest populations on the West Coast. Redwood Creek is considered critical habitat for coho salmon. In the Project area, streams with adjacent forest habitat such as Redwood Creek provide a cold-water environment, which is critical for salmon fry during the summer months as they migrate on their way to natal spawning sites in gravel bars. Rocky shoreline and coastal dune habitat occurs within 1 mile of the alignment.

Riverine

Riverine habitat is present throughout the Project area and includes river channels and the lower reaches of major creeks, with the occasional off-channel ponds. Riverine habitat provides important water and vegetation resources used by many species. Wildlife species expected in riverine habitat along the alignment include mammals such as North American river otter (*Lutra canadensis*), American beaver (*Castor canadensis*), American mink (*Neovison vison*), and raccoon, as well as salmonids and amphibians. Bird species expected to use the riverine habitat include American dipper (*Cinclus mexicanus*), common merganser (*Mergus merganser*), bald eagle (*Haliaeetus leucocephalus*), osprey (*Pandion haliaetus*), and belted kingfisher (*Megaceryle alcyon*). The exposed gravel bars formed by high flows and annual bar scour provide nesting habitat for killdeer (*Charadrius vociferous*) and spotted sandpiper (*Calidris aethene*). This area also provides basking habitat for foothill yellow-legged frog (*Rana boylei*), a state candidate threatened species.

Lacustrine and Wetlands

Lacustrine habitat occurs at the coastal lagoons along Segment 5—Freshwater, Stone, and Big Lagoons, which are part of a large, connected lagoon system. These lagoons include freshwater and brackish water marsh habitat, and provide habitat for many wildlife, including marine mammals, fish, aquatic birds, and terrestrial species such as elk (*Cervus canadensis*), along the edges. The coastal lagoons are an important nursery site for many fish species, including salmonids and the endangered tidewater goby (*Eucyclogobius newberryi*).

Special-Status Species

The following resources were used to compile a list of plant and wildlife species potentially affected by the Project:

- CDFW's California Natural Diversity Database (CNDDDB) (CDFW, 2022).
- The California Native Plant Society (CNPS) rare plant online inventory (CNPS, 2022).
- U.S. Fish and Wildlife Service (USFWS) Information for Planning and Consultation environmental conservation online system (USFWS, 2022).

The initial analysis identified special-status plant and wildlife species within the 14 U.S. Geological Survey 7.5-minute topographic quadrangles composing the Project alignment. Appendix C, Table C-1 identifies these species, their potential habitats, and their potential for occurrence within the facilities or along the cable alignment. Evaluations of habitat suitability for special-status species in the Project area were based on the Biological Resources Technical Report (LBJ Enterprises, 2020), the PEA (Karuk Tribe, 2020), and reconnaissance-level biological surveys conducted in 2015 and 2018. No focused or protocol-level wildlife surveys were conducted in support of the Project. The species with the greatest potential to occur are discussed below.

Special-Status Plants

Bald Mountain Vetch (*Astragalus umbraticus*)

The Bald Mountain vetch is a California Rare Plant Rank (CRPR) 2B.3 species. This vetch is a perennial herb that grows in the woodlands of mountains in the coastal Klamath Mountains and Coast Ranges of California and Oregon. It favors foothill wetlands and lower montane coniferous forest. Occasionally it is found along roadsides. The species' elevation range is 150–1,250 meters (500–4,000 feet) and it blooms from May to August. The CNDDDB has recorded this species in Segments 2, 3, and 4 of the Project alignment and it has high potential to occur along the alignment.

Coast Fawn Lily (*Erythronium revolutum*)

Coast fawn lily is a CRPR 2B.2 species. It is a small pink-flowered lily that blooms in the spring. The geographical distribution of this species in California encompasses Sonoma, Mendocino, Humboldt, Del Norte, Trinity, Tehama, and Siskiyou Counties, from near sea level to more than 1,600 meters (5,249 feet). The species' preferred habitats are moist Douglas-fir and mixed evergreen forests and woodlands, and it can be found along streambanks and other wet, moist, or well-shaded locations. Suitable habitat is present; this plant species was recorded in the CNDDDB in Segments 1, 2, and 3 of the Project alignment in the inland areas, where it has moderate potential to occur.

California Globe Mallow (*Iliamna latibracteata*)

California globe mallow is a CRPR 1B.2 species. This species is found throughout North Coast coniferous forests. It favors seepage areas in silty clay loam on streambanks above 60 meters (200 feet) to 2,000 meters (6,500 feet). The CNDDDB recorded suitable habitat for this species in Segments 3 and 4. The species was identified on either side of Bald Hills Road about 3 miles east of Schoolhouse Peak, at Coyote Peak Road in locations where the Project alignment would be located adjacent to the roadway.

Howell's Montia (*Montia howelli*)

Howell's montia is a CRPR 2B.2 species. This species is a tiny winter-growing annual that germinates when the cold rains arrive in late fall, grows through the early spring, flowers from March to May, then sets seed and quickly disappears. The current geographical distribution of Howell's montia in California includes Humboldt County and the very western edge of Trinity County. It has been reported from near sea level to about 835 meters (2,740 feet). Its preferred habitats are vernal wet, compacted soils, meadows and seeps, vernal pools, and vernal mesic areas in the North Coast coniferous forest. It grows in disturbed habitat, and may be found on roads, roadsides, skid trails,

turnouts, landings, grazed meadows, and other areas where compacted soils maintain a vernal wet area and competing vegetation is minimal during its growing season. The CNDDDB records this species west of Martin's Ferry, in Segments 2 and 3. It was also identified in Segment 5.

Siskiyou Checkerbloom (*Sidalcea malviflora* spp. *patula*)

Siskiyou checkerbloom is a CRPR 1B.2 species. It is a perennial rhizomatous herb that is native to California and inhabits road cuts, grassy slopes, coastal bluff scrub, and open forests at 15–880 meters (50–2,900 feet) elevation. This species blooms May–August and is found only in California and Oregon. It is a perennial herb, 2–3 feet tall with rose-pink flowers. Habitat for Siskiyou checkerbloom includes North Coast coniferous forest, coastal prairie, open coastal forest generally less than 700 meters (2,300 feet) in elevation, broadleaved upland forest, and sunny openings of foothill woodland and redwood forest plant communities. The species occurs in Mendocino, Humboldt, and Del Norte Counties in California, and north into Oregon. It can be found along grassy roadsides, and at the prairie interface with redwood or mixed evergreen forests. Locally, Siskiyou checkerbloom has been found in meadow habitat, along roadsides, or in openings or at the edges of Douglas-fir or mixed evergreen forests. The potential impacts on this plant arise primarily from reestablishment of conifer stands, road building, and road maintenance. Suitable habitat is present and this species is documented in Segments 3, 4, and 5.

Special-Status Wildlife

Fish

Coast Cutthroat Trout (*Oncorhynchus clarkii clarkii*)

Coast cutthroat trout is a California Species of Special Concern and is a semi-anadromous or sea-run fish. The native range of the coastal cutthroat trout extends south from the Kenai Peninsula in Alaska to the Eel River. These trout reside in tributary streams and rivers of the Pacific basin rarely more than 100 miles (160 kilometers) from the ocean. Adults migrate from the ocean to spawn in freshwater. Juveniles migrate to the sea, where they feed and mature. Unlike steelhead and Pacific salmon, coast cutthroat trout do not make lengthy sea migrations, and usually will remain in or near estuarine waters close to their natal streams. They spawn in small to moderately large, clear, well-oxygenated, shallow rivers with gravel bottoms. They use a variety of habitat types, including lower and upper reaches of both large and small river systems, estuaries, sloughs, ponds, lakes, and nearshore ocean waters. In freshwater, they prefer deeper pool habitat and cover, such as woody debris. The CNDDDB records this species in Segments 2, 3, 4, and 5.

Northern California Steelhead (*Oncorhynchus mykiss*)

Northern California steelhead is federally listed as threatened and is a California Species of Special Concern. Steelhead have a complex and variable life history. They can be freshwater resident or anadromous; the anadromous steelhead can spend up to seven years in freshwater before reaching the smolt stage, and then up to three years in the ocean before first spawning.

The Klamath River supports both summer and winter steelhead. Steelhead can spawn more than once before dying, unlike Pacific salmon. Intermittent streams may be used for spawning. Fry inhabit shallow water along the banks of perennial streams. Summer rearing occurs in the faster

parts of pools. Winter rearing occurs across a wide range of fast- and slow-velocity habitats, but is most often seen in complex habitats with large instream wood. Larger and older juveniles will move downstream to rear in larger tributaries and the main river channel. Rearing in California is usually two years. The CNDDDB reports steelhead in tributaries to the Klamath River, and the species is known to occur throughout the Klamath River watershed.

California Coastal Chinook Salmon (*Oncorhynchus tshawytscha*)

California coastal Chinook salmon is federally listed as threatened. Spring-run and fall-run² Chinook are in decline, but can be found on the Rogue, Klamath, and Trinity Rivers. On these larger river systems, spawning occurs in late October and early November. Eggs resulting from fall-run spawning incubate and emerge from December into mid-April. Fry use woody debris and interstitial spaces as cover, but as they grow, they prefer deeper water with higher velocity. The CNDDDB records Chinook salmon in Segment 1 in Redwood Creek and other streams.

Southern Oregon/Northern California Coast Coho Salmon (*Oncorhynchus kisutch*)

Southern Oregon/Northern California Coast (SONCC) coho salmon is federally listed as threatened. This run includes fish originating from coastal streams and rivers from southern Oregon south to Punta Gorda, California, including Redwood Creek and the Klamath River watershed. Adults typically begin their freshwater spawning migration in late summer and fall, spawn November to February. Coho salmon fry typically transition to the juvenile stage by about mid-June. Juveniles rear in fresh water for up to 15 months, then migrate to the ocean as smolts in the spring. Coho salmon typically spend 2 growing seasons in the ocean before returning to their natal stream to spawn as 3 year-olds. There are no SONCC coho CNDDDB records along the Project alignment, but RNP have recorded coho observations in Redwood Creek.

Tidewater Goby (*Eucyclogobius newberryi*)

Tidewater goby is federally listed as endangered and is a California Species of Special Concern. This species is endemic to California, inhabiting coastal lagoons, salt marshes, and brackish water bays at the mouths of freshwater streams, often in sparsely vegetated habitat. It is an annual species (typically living one year), and prefers benthic (bottom) habitat, where it may be found in schools of varying size. It prefers sandy substrate for breeding. Tidewater goby is known to occur in both Stone Lagoon and Big Lagoon along Segment 5 of the Project alignment, within the Humboldt Lagoons area.

Reptiles and Amphibians

Southern Torrent Salamander (*Rhycotriton varigatus*)

Southern torrent salamander is a California Species of Special Concern. This species is mainly aquatic, but is capable of terrestrial activity, living primarily in seeps and headwater streams where the water remains cold year-round. These salamanders are typically found in disjointed populations on north-facing slopes and relatively high elevations or in mature to old-growth forests. The southern torrent salamander is the smallest salamander endemic to the Pacific

² Spring-run Chinook salmon migrate from the ocean into freshwater early in the year and spend the summer in cool, deep pools near their spawning habitat before spawning in the fall. Fall-run Chinook salmon migrate into freshwater during fall months and spawn in the fall.

Northwest, ranging from Northern California to Northern Oregon. The species' preferred habitat is cool seeps and mountain brooks that are high in oxygen and have coarse gravel beds. Southern torrent salamanders can travel outside the stream when ground moisture content is high. Aquatic larvae live in clear, shallow water and still, murky creeks with accumulated leaves. The CNDDDB records this species in Segments 2, 3, 4, and 5. There are likely pockets of suitable habitat at the mouths of small creeks that empty into the Klamath River, which also support this species.

Del Norte Salamander (*Plethodon elongatus*)

Del Norte salamander is a California Watch List species. This species is mainly terrestrial. Individuals bury themselves deep into fragmented rock slopes where clear, cold water is present. The species is found in areas of moist rocky substrates in redwood or Douglas-fir forests, typically among moss-covered rocks or under bark and other forest litter, or in road cuts through moist, forested areas. The Del Norte salamander typically avoids very wet areas. This species is locally abundant in suitable forest habitat, but is threatened by logging activity. The CNDDDB recorded this species in Segment 1 of the Project alignment where suitable habitat is present in loose rock banks along the roadside.

Foothill Yellow-Legged Frog (*Rana boylei*)

Foothill yellow-legged frog is a Species of Special Concern in California. This species is listed by CDFW as threatened in other regions, but listing was found not warranted in northwest California. Foothill yellow-legged frogs are found on rocky perennial streams in forested areas and along rivers throughout the North Coast. They have been detected regularly along the Klamath River and in the Redwood Creek watershed, including along the margins adjacent to the river. The adults and sub-adults prefer river bars along both riffles and pools, with some shade. Occasionally, foothill yellow-legged frogs are found in other riparian habitats such as backwaters, isolated pools, or slow-moving waters with mud substrate; they breed in shallow, slow-flowing water. The CNDDDB records this species in Segments 1 and 4.

Northern Red-Legged Frog (*Rana aurora*)

Northern red-legged frog is a California Species of Special Concern. This species may be found in riparian zones, damp woods, and meadows during wet weather. Northern red-legged frogs breed in freshwater ponds, pools in slow streams, marshes, or reservoirs with submerged vegetation for egg attachment and emergent vegetation for cover. Breeding northern red-legged frogs are found in many of the freshwater marshes and ponds in the lower Klamath River and Redwood Creek areas. There are CNDDDB records for this species from Segments 2, 3, 4, and 5 in habitats including ponds, marshes, and moist forest floor debris.

Pacific Tailed Frog (*Ascepus truei*)

Pacific tailed frog is a California Species of Special Concern. This species is found from British Columbia to Northern California and at elevations from sea level to 8,400 feet. Their habitat includes cold, clear streams in mature forests. All life stages are adapted for life in fast-flowing streams. Eggs in strings of 40–80 are attached to the underside of rocks. The CNDDDB records this species along Segment 5. There are also pockets of suitable habitat on the small creeks that empty into the Klamath River in Segments 1 and 2 that may also support this species.

Western Pond Turtle (*Actinemys marmorata*)

Western pond turtle is a California Species of Special Concern. This species is found throughout the Klamath River/Redwood Creek watershed, where it is regularly seen basking on the banks or logs in the river channel. It can be found in a wide variety of wetland habitats including rivers and streams (both permanent and intermittent), lakes, ponds, reservoirs, permanent and ephemeral shallow wetlands, abandoned gravel pits, stock ponds, and sewage treatment lagoons. It is active from February to November. During summer droughts, western pond turtles can bury themselves in soft bottom mud. The CNDDDB recorded this species in Segment 5 and pond turtles have also been observed along the Klamath River in Segment 1. Along the alignment, suitable habitat is available in all segments, and turtles are expected to be present throughout the Project area.

Birds

Bald Eagle (*Haliaeetus leucocephalus*)

Bald eagle is federally protected under the Bald and Golden Eagle Act and is state-listed as endangered under the California Endangered Species Act (CESA). This species was also formerly listed under the federal Endangered Species Act (ESA), but was delisted in 2007. Bald eagles are rare to uncommon in Humboldt County. Suitable habitat for this species includes open water, such as rivers, large creeks, lakes, and coastal lagoons, where they feed on fish. Bald eagles typically nest in undisturbed shorelines or forested areas close to foraging habitat. For nesting sites, they favor tall perches with long sight lines that are secluded from human disturbances. Suitable waters are available, and bald eagles have the potential to forage or nest along the major river portions of the alignment. Bald eagles are known to nest within the greater Klamath River and Redwood Creek watersheds, and have been recorded near Orleans.

Marbled Murrelet (*Brachyramphus marmoratus*)

Marbled murrelet is federally listed as threatened and state-listed as endangered. This nearshore seabird uses the wide limbs of mature or old-growth conifers for nesting platforms. The species typically uses coast redwood, but mature Douglas-fir may also support nests. Nesting season is from March 24 through September 15. Suitable old-growth habitat is present along the Project alignment, primarily within RNP, with a known colony in the Lady Bird Johnson Grove and in other locations within the park. Murrelets are known sporadically from other isolated patches within the Klamath River drainage, including one detection near Johnsons in 2014 from an old-growth mixed redwood/Douglas-fir stand. Cappel Creek on State Route 169 also provides suitable habitat, and CNDDDB records show detections in Segments 3, 4, and 5.

Northern Spotted Owl (*Strix occidentalis occidentalis*)

The northern spotted owl (NSO) is federally and state-listed as threatened. Humboldt County supports a substantial number of breeding pairs of NSOs. They are often associated with old-growth forests, but in northwestern California, they also occur in second-growth redwood-tanoak stands that support high densities of their preferred prey, dusky-footed woodrats, and that retain suitable trees for nests. This species is known to occur within the Project area on U.S. Forest Service lands, tribal lands, and commercial timberlands. Suitable foraging habitat and potential nesting habitat is present along the alignment in all segments. Although NSOs typically avoid using habitat close to

busy roads, they may use habitat along quieter roads where activity, especially nighttime activity, is minimal. NSOs have been recorded in the CNDDDB along all Segments; however, there are no currently known nests or activity centers within 0.25 mile of the Project centerline (CDFW, 2022).

White-Tailed Kite (*Elanus leucurus*)

White-tailed kite is a CDFW Fully Protected species. The kite is a common breeding resident of coastal plains of Humboldt County. Preferred habitats support California vole (*Microtus californicus*), their primary prey, with tall grasses and thatch. Typical sites that support kites tend to occur in networks of interconnected grassland patches. Nesting sites are found in the subcanopies of deciduous or conifer trees close to foraging areas. Suitable habitat along the Project route is limited to the Bald Hills' oak woodlands and the grassland and dune habitats along lower Redwood Creek and Little River. Kites may nest either in the open areas or in forest habitat with a suitable nesting structure near (less than 0.5-mile from) foraging habitat along the Project alignment.

American Peregrine Falcon (*Falco peregrinus anatum*)

American peregrine falcon is a CDFW Fully Protected species and Species of Special Concern. This species was delisted from both the ESA and CESA in the 1990s. Peregrine is a common migrant and wintering bird, but a rare breeding species in Humboldt County. Breeding sites are typically coastal and inland cliffs, and occasionally bridges or platforms in the tops of large conifer trees, often near bodies of water. Foraging habitat is widespread along the Project alignment, but suitable nesting habitat is limited. Known nesting locations are limited to one cliff site along State Route 96 at near the mouth of Bluff Creek in Segment 1 and conifers within the Redwood Creek watershed in RNP (Segment 4).

Little Willow Flycatcher (*Empidonax traillii brewsteri*)

Little willow flycatcher is state-listed as endangered. Detections in Humboldt County can be relatively common during spring and fall migrations. Only three pairs have been confirmed breeding in Humboldt County since 1930: one on the lower Klamath River area and one each on the lower Eel and lower Mad Rivers. Other possible or probable breeding observations are located just inland along the North Coast.

Although very rare in Northern California, willow flycatchers regularly breed in 10- to 20-year-old regenerating clear-cuts in the Coast Ranges of Oregon and Washington. These habitats are typically 1,000–3,000 feet in elevation and contain young conifers along with willow and alder, similar to habitat along the lower Klamath River. Along the Eel and Mad Rivers, nesting habitat is composed of large stands of dense willow/cottonwood-dominated riparian habitat close to surface waters. Unconfirmed potential nesting locations have recently occurred along the mid- and lower Klamath River and lower Redwood Creek (Karuk Tribe, 2020). Potential nesting locations occur along the lower portion of Bald Hills Road adjacent to Redwood Creek riparian habitat in Segment 4. In addition, suitable nesting habitat is present along the Klamath River in Segments 1 and 2.

Nesting Birds

Sections 3503 and 3503.5 of the California Fish and Game Code and the federal Migratory Bird Treaty Act (MBTA) protect raptors and passerines and their eggs and nests from incidental

“take.” These protections apply to the special-status birds identified in Appendix C, Table C-1, and other common birds that may nest in or near the Project alignment.

Mammal Species

Pallid Bat (*Antrozous pallidus*)

Pallid bat is a California Species of Special Concern. Pallid bat is found throughout California, except at high elevations, and while it is best known from arid habitats, it also occurs in mixed conifer forest habitats in Northern California. Pallid bats most often use rock crevices or human structures that provide crevice-like features for day and night roosting; however, they may use large-diameter (more than 100 centimeters in diameter at breast height) live trees and snags as well. Roosting sites in trees and snags are most often in cavities, including basal hollows, and less commonly in external crevices or underneath exfoliating bark. Bridges may be used as night roosts and individual bats typically exhibit high fidelity to particular night roosts. The pallid bat has been recorded on Segments 3 and 4 of the Project alignment.

Townsend’s Big-Eared Bat (*Corynorhinus townsendii*)

Townsend’s big-eared bat is a California Species of Special Concern. This species occurs throughout California, in both forested and nonforested habitats. It appears to use bridges for night roosts only rarely. There are two regional occurrences in the CNDDDB, not along the alignment (CDFW, 2022); however, suitable habitat for this species is available in all segments and the species may be present.

Sonoma Tree Vole (*Arborimus pomo*)

Sonoma tree vole is a California Species of Special Concern. The species is found within coniferous forest in the fog belt in northwestern California, including Humboldt County. Tree voles build their nests within the canopies of trees and feed almost exclusively on Douglas-fir needles. The species’ habitat consists of mixed evergreen forests; optimum habitat appears to be wet and moist old-growth Douglas-fir forest, but this species also occurs in younger Douglas-fir forests. It nests in trees, 2–50 meters (7–160 feet) above ground; it may use the old nests of birds, squirrels, or woodrats. The Sonoma tree vole nests very high in trees, in inaccessible areas. Suitable habitat occurs in all segments of the alignment, where mature and old-growth Douglas fir trees are present. The CNDDDB has recorded this species in the wetter western portions of Segments 3, 4, and 5.

Humboldt Marten (*Martes caurina humboldtensis*)

Humboldt marten is federally threatened and state-listed as endangered. It is found in dense, late successional coast redwood or Douglas fir forests containing large trees and snags. This species nests in cavities of large trees, snags, stumps, logs, burrows, caves, or crevices in rocky areas. It is extremely sensitive to disturbance and prefers habitats with little human use. Humboldt marten is moderately likely to occur along the Project alignment in Segments 1, 2, 3, and 4. The closest CNDDDB occurrence record is located approximately 1 mile north-northwest of Segment 1 in SRNF. It is also known to occur in RNP in Segment 4.

Fisher (*Pekania pennanti*) (formerly Pacific Fisher)

Fisher is state-listed as threatened. This species occurs in mature mixed conifer hardwood forests of the North Coast Ranges, the Klamath and Siskiyou Mountains, and the Sierra Nevada. Fishers can be found in forest habitats from near sea level on the coast up to 6,000 feet in interior mountain ranges. Although this species is elusive, there are numerous occurrences along the alignment. The CNDDDB reports fishers in Segments 2, 3, 4, and 5. They are likely to occur in numerous locations along the Project alignment, with the highest frequency of habitat use along portions with limited human disturbance and adjacent suitable forest habitat.

Special-Status Vegetation Communities

A *sensitive natural community* or *special-status vegetation community* is a biological community that is regionally rare, provides important habitat for wildlife, is structurally or ecologically complex, or is in other ways of special concern to federal, state, or local agencies. Most sensitive natural communities perform important ecological functions, such as maintaining water quality and providing essential habitat for plants and wildlife. Some plant communities support a unique or diverse assemblage of plant species, and therefore are considered sensitive from a botanical standpoint. Sensitive communities are listed in the CNDDDB and classified according to the vegetation classifications in the *Manual of California Vegetation* (Sawyer et al., 2009) and grouped according to the National Vegetation Classification Standard (CDFW, 2018). Sensitive vegetation communities along the alignment include cottonwood/willow forest, riparian scrub, and redwood forest.

Critical Habitat for Listed Species

Critical habitats are areas considered essential for the conservation of a species listed as endangered or threatened under the ESA. Critical habitats are specific geographic areas that contain features essential for the conservation of listed species and may require special management and protection. Critical habitat may include an area not currently used by an endangered or threatened species, but needed for the species' recovery. Proponents of projects involving a federal agency or federal funding are required to consult with USFWS to ensure that their actions will not destroy or adversely modify critical habitat.

The Project alignment crosses critical habitat for marbled murrelet and NSO. Within Redwood Creek and its tributaries are areas of critical habitat for Northern California steelhead and California coastal Chinook and Southern Oregon/Northern California Coast coho salmon; however, these waters would not be affected by construction of the Project. **Figure 4.4-2** shows areas of critical habitat for terrestrial species along the alignment.

Wildlife Movement Corridors

Wildlife movement corridors are considered an important ecological resource by CDFW and USFWS, and are regulated under the California Environmental Quality Act (CEQA). Movement corridors may provide favorable locations for wildlife to travel between different habitat areas such as foraging sites, breeding sites, cover areas, and preferred summer and winter range locations. They may also function as dispersal corridors, allowing animals to move between various locations within their range. Topography and other natural factors, in combination with

urbanization, can fragment or separate large open-space areas. Areas of human disturbance or urban development can fragment wildlife habitats and impede wildlife movement between areas of suitable habitat. This fragmentation creates isolated “islands” of vegetation that may not provide sufficient area to accommodate sustainable populations, and can adversely affect genetic and species diversity. Movement corridors mitigate the effects of fragmentation by allowing animals to move between remaining habitats, which in turn allows depleted populations to be replenished and promotes genetic exchange between separate populations.

CDFW’s California Essential Habitat Connectivity online data viewer provides a resource to view statewide areas of natural landscape blocks, areas that connect these landscape blocks, and areas that are important for biological conservation (CDFW, 2020). The Coast Ranges and major highways constitute barriers to movement for wildlife, but few other barriers are present in this sparsely populated region.

4.4.2 Regulatory Framework

For a discussion of federal, state and local regulations that are relevant to the Project see Appendix F.

4.4.3 Applicant Proposed Measures

In addition to the selection of a Project alignment intended to avoid and minimize the Project’s environmental impacts, the following Applicant Proposed Measures (APMs) related to biological resources have been included as part of the Project:

- **APM GEN-5:** Directional drilling will be used where needed and approved to avoid impacts to water, biological and cultural resources.
- **APM GEN-9:** The Construction Contractor will be required to develop and implement a Worker Environmental Awareness Program (WEAP).
- **APM WET-1:** Wetland delineations will be performed/updated prior to construction to support CWA Section 404 permitting and to minimize Project impacts. The delineation will identify both wetland and non-wetland waters of the United States that would be affected by the project. The delineation will also provide sufficient information to support California permitting and will include delineation of wetland and non-wetland waters of the State of California.
- **APM WET-2:** Where impacts on wetlands are not avoidable, site specific crossing plans and measures to mitigate impacts will be submitted to the appropriate regulatory agency as well as the land managing agency. The Karuk Tribe will obtain all necessary permits prior to discharging dredged or fill material to the waters of the U.S. or state.
- **APM WET-3:** If trench dewatering is needed, it will be completed per the Caltrans BMP [California Department of Transportation Best Management Practice] NS-2 specifications and Field Guide to Construction Site Dewatering.
- **APM SOIL-1:** Disturbance of soils and rocks and vegetation removal will be limited to the minimum area necessary for access and construction. There will be no removal of any oak trees or rock outcrops.

- **APM WEED-1:** Project personnel and their contractors will be trained on noxious and invasive weed identification to facilitate avoidance of infestations where possible or identification of new infestations.
- **APM WEED-2:** Gravel and other materials used during fiber optic cable installation on federally managed lands will come from certified weed-free sources.
- **APM WEED-3:** Project vehicles will arrive at the job site clean of all soil and herbaceous material. The Construction Contractor will ensure vehicles and equipment are free of soil and debris capable of transporting noxious weed seeds, roots, or rhizomes before the vehicles and equipment access the Project.
- **APM BIO-1:** If construction will occur during nesting season for migratory birds (16 U.S.C sec.703-712, typically March–July) each year, a qualified biologist will conduct a preconstruction survey for nesting birds where vegetation removal is planned (e.g. plowing, trenching, establishment of directional drilling entry and exit pits, and new pole installation). If no nests are encountered, vegetation removal may proceed. If a nest is found, that vegetation may not be removed until a biologist has determined that the nest is unoccupied, has failed, or the young have fledged.
- **APM BIO-2:** Seasonal restrictions for construction in old-growth forests in RNP, as specified by NPS [National Park Service] regulations and policy, including construction noise limits, will be followed. Seasonal restrictions for construction in GDR lands will follow GDR policies and agreements.
- **APM BIO-3:** CNDDDB data from 2021 show that there are no mapped NSO nests within 0.25-mile of the Project centerline. Available CNDDDB data from the breeding season prior to construction would be reviewed to assure that there are no new NSO nests within 0.25-mile of the Project centerline. If a new NSO nest is recorded within 0.25-mile of the Project centerline, no construction would be allowed within 0.25-mile of the nest between February 1 and August 1, or until a qualified biologist has determined that the young are fledged, the nest abandoned, or the nest failed.
- **APM BIO-4:** Directional drilling will be used in areas of old-growth redwood roots (Segment 4, Bald Hills Road) to avoid impacts to the trees. The Applicant will consult with NPS to determine the need for hand excavation to prevent damage to tree root systems.
- **APM BIO-5:** Where bridge hangs are planned, a preconstruction survey for listed species of bats will occur. If a maternal colony of a listed bat is found, construction will be deferred until the young have been weaned.

4.4.4 Environmental Impacts and Mitigation Measures

- a) **Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by CDFW or USFWS. *Less than Significant with Mitigation; Localized; Moderate.***

As shown in Figure 4.4-1, the Project alignment would cross habitat that supports a variety of terrestrial and aquatic special-status species. In Segment 4, the Project would also be located in areas of old-growth redwood forest on Bald Hills Road. This sensitive community is discussed in response to question b).

Special-Status Plants

Segment 1

The Segment 1 alignment would be located along State Route 96 in the Klamath River Canyon. In the vicinity of Orleans, fiber optic cable would be strung along existing overhead power lines, then west of Crawford Creek, the cable would be installed in trenches, sometimes with the use of saw-cuts through rock. The vegetation along roadsides in this segment is primarily nonnative species such as Scotch broom, star thistle, Himalayan blackberry, and English ivy; this type of habitat does not provide conditions likely to support special-status species. Thus, special-status plants are unlikely to occur in the Project footprint in this segment, and no adverse impacts on rare plants would occur in Segment 1.

Segment 2

In this Segment, the fiber optic cable would be strung primarily on existing power lines, with trenching for a short distance in the vicinity of Cappell Creek, a tributary to the Klamath River west of Martin's Ferry. Like Segment 1, this area features nonnative invasive plants along the roadside, with mixed Douglas-fir and hardwood forests and alder forests in riparian habitat at channel crossings. No suitable habitat for any special-status plants exists along the alignment; thus, they are not likely to occur in this segment. No adverse impacts on rare plants would occur in Segment 2.

Segment 3

The Segment 3 alignment would be located within roadside trenches along Bald Hills Road, passing through mixed Douglas-fir and hardwood forests along the border of RNP. The segment is located within meadows that were historically maintained by Native American fires, but are now being invaded by Douglas-fir and redwood trees. The western terminus of this segment is in a second-growth redwood/Douglas-fir/hemlock forest. As noted in the CNDDDB, special-status plants such as California globe mallow, Bald Mountain vetch, coast fawn lily, Howell's montia, and Siskiyou checkerbloom are found in this region and have suitable habitat along the roadsides in this segment; individuals of this species could be crushed or trampled during construction, which could lead to permanent destruction of particular plants. These impacts would be localized but would be potentially significant and major.

Segment 4

The alignment for Segment 4 continues along Bald Hills Road through mixed second-growth redwood/Douglas-fir forests, then crosses groves of old-growth redwoods, including the Lady Bird Johnson Grove, which are home to nesting colonies of endangered marbled murrelets. Bald Hills Road crosses the floodplain of Redwood Creek with alders, willows, and other riparian plants present, along with disturbed and developed areas, and crosses Redwood Creek on an existing bridge. Special-status plants such as California globe mallow, Bald Mountain vetch, and cylindrical trichodon are found in this region, and suitable habitat is present along the roadsides in this segment; individuals could be crushed or trampled during construction, which could lead to permanent destruction of particular plants. These impacts would be localized but would be potentially significant and major.

Segment 5

The Segment 5 alignment would use Pacific Gas and Electric Company (PG&E) poles along U.S. Highway 101 on the perimeter of Freshwater, Stone, and Big Lagoons, and then through redwood and Douglas-fir forest on a former railroad grade, mostly paralleling an existing timber road in GDR timberland. The alignment would later cross pastures and rural developments, both overhead and underground, to its terminus in McKinleyville. Special-status plants including Siskiyou checkerbloom, cylindrical trichodon, and Howell's montia are found in this region, and suitable habitat is present along the roadsides in this segment; individual plants could be crushed or trampled during construction, which could lead to permanent destruction of particular plants. These impacts would be localized but would be potentially significant and major.

Summary Segments 1-5

APMs would be implemented to reduce potential impacts. APM GEO-5 states that directional drilling will be used where needed, which would reduce impacts on wetlands and riparian habitat. Measure GEO-9 states that the contractor will implement a WEAP. The WEAP should inform workers of the special-status species and other biological resources they may encounter on the job, and ways to identify and avoid harm to these species.

However, these APMs would not fully reduce potential impacts on special-status plants to less than significant and minor. Therefore, in addition to the APMs, **Mitigation Measure BIO-1** would be implemented to protect rare plants that may be present in the alignment. This measure requires that rare plant surveys be undertaken in Segments 3, 4, and 5 before construction, in areas where rare plants may be present. Should special-status plants be found, they would be avoided, or relocated if necessary, as described below. Implementing this mitigation measure would reduce impacts on special-status plants to a less than significant and moderate level.

Mitigation Measure BIO-1: Avoid Impacts on Rare Plants.

A qualified biologist shall conduct a preconstruction survey of each Project site for special-status plant species with the potential to occur within the area of disturbance. The survey shall be floristic in nature and shall follow the procedures outlined in the CDFW publication *Protocols for Surveying and Evaluating Impacts to Special-status Native Plant Populations and Natural Communities* (CDFW, 2018). The survey shall be conducted between April and July in conjunction with the blooming seasons of those rare plants with moderate potential to occur in the Project area.

If no special-status plants are observed during appropriately timed surveys by a qualified botanist, it shall be assumed that the construction activity will have no impact on special-status plants and no further action is required.

If special-status plants are identified within the Project area, the individuals or populations shall be mapped and quantified and reported to the CNDDDB, and the project manager shall be notified so that potential impacts on these known occurrences shall be avoided, when feasible. Coordination with CDFW and/or USFWS staff shall be conducted to establish appropriate avoidance and minimization measures if the species is federally or state listed. Avoidance and minimization measures may include:

1. No-disturbance buffers.

2. Work windows for low-impact activities that are compatible with the dormant phase of a special-status plant life cycle but that may kill living plants or severely alter their ability to reproduce.
3. Silt fencing or construction fencing to prevent vehicles, equipment, and personnel from accessing the occupied habitat.
4. Erosion control BMPs such as straw wattles made of rice straw, erosion control blankets, or hydroseeding with a native plant seed mix to prevent sedimentation from upslope construction activities.
5. In consultation with and as authorized by CDFW or USFWS, collection and spreading of seeds or relocation of plants to appropriate locations by a qualified botanist.

Special-Status Wildlife

Segment 1

Fisheries

Steelhead and Chinook salmon are present in the Klamath River in Segment 1, but would not be affected by the Project. The Project alignment would cross the Klamath River aerially via installation of new poles placed outside of the riverbed, to limit ground disturbance and avoid impacts on water features. Hence, no impacts on special-status fish are anticipated to occur along Segment 1.

Terrestrial Wildlife

Along this segment adjacent to State Route 96 in the Klamath River Canyon, a number of small channels descend the canyon toward the Klamath River, crossing in culverts beneath the highway. Where the highway crosses streams, alder-dominated riparian woods may be present, with willows and blackberry in the understory. Adjacent to the road are mixed Douglas-fir and hardwood forests that provide habitat for listed and special-status mammals, including fisher and Humboldt marten, and special-status bat species that may roost in trees. Both intermittent and perennial channels could provide habitat for special-status amphibians including southern torrent salamander, foothill yellow-legged frog, and Del Norte salamander, and dispersal habitat for western pond turtle. However, the Project would cross channels by hanging cable on existing crossings, or, where necessary, with directional drilling, which would have no physical footprint within sensitive amphibian stream habitat.

Trenching, plowing, saw-cutting, and drilling activity could directly injure or kill special-status amphibians, reptiles, and mammals, should any be present in the work area. Fisher and Humboldt marten are secretive animals, sensitive to disturbance, and are unlikely to be present near roads. However, if a marten or fisher were present outside the breeding season, it could be harmed. Construction vehicles could kill or injure individuals in the work area. Establishing staging areas, installing poles, and digging directional drilling entry and exit pits could cause noise and vibrational disturbance to wildlife. For extremely rare species, loss of an individual is potentially significant and major. Excessive noise, lighting, or human and vehicle activity during construction could disturb nearby special-status wildlife species. These short-term impacts would be localized but could be potentially significant and major to martens, fishers, or special-status amphibians present in the vicinity of work areas.

APMs would be implemented to address potential impacts on special-status species. APM GEN-5 states that directional drilling will be used where needed, which would avoid impacts on fish and amphibian species in aquatic habitat. APM GEN-9 states that the contractor will implement a WEAP. This WEAP should inform workers of the special-status species and other biological resources they may encounter on the job, and ways to identify and avoid harm to these species. Implementing these measures would reduce potential harm from drilling and worker error to special-status species, but could still expose special-status amphibians, reptiles, or mammals to trampling, injury, or disturbance from noise or lights during construction. After the implementation of APMs, the above-described impacts would remain significant and major. Therefore, the following mitigation measures would be implemented.

Mitigation Measure BIO-2 mandates that a qualified biologist be present during initial ground disturbance in potential habitat for special-status mammals, amphibians and reptiles, and requires that all holes be covered to prevent entrapment of mammals, reptiles, or amphibians. It further requires a seasonal operating limit for noise-generating activity in Humboldt marten core habitat in Segments 4 and 5 during the marten breeding season (March – July). Implementing these measures in conjunction with APMs GEN-5 and GEN-9 would reduce impacts on special-status mammals, reptiles, and amphibians to a less than significant, minor level.

In addition, APM BIO-5 requires preconstruction surveys for federally and state-listed bats before bridge hangs, and calls for construction to be postponed if maternity colonies are found, to avoid impacts. This measure would reduce potential impacts on maternity colonies of listed bats under bridges to a less than significant and minor level. However, APM BIO-5 would not protect maternity colonies of non-listed special-status bats, or night or seasonal roosts of bats that could be disturbed or displaced by construction activities. Thus, the impact would remain significant and major.

Mitigation Measure BIO-3 requires bat surveys in any mature trees proposed for trimming as part of the Project. As provided for roosts under bridges by APM BIO-5, this mitigation measure requires that bat maternity roosts in trees not be disturbed. Nonmaternity roosts in trees would be removed using a two-stage process to avoid harming the bats.

Implementing Mitigation Measures BIO-2 and BIO-3 would reduce potential impacts on bats to a less than significant and moderate level.

Mitigation Measure BIO-2: Implement Measures to Avoid Impacts on Special-status Terrestrial Species

To avoid and minimize direct and indirect impacts on special-status terrestrial wildlife species, the following protection measures shall be implemented:

1. The name(s) and credentials of the qualified biologist(s) to act as construction monitors shall be submitted to CDFW/CPUC for approval at least 15 days before construction work begins.
2. Before the start of work, an approved biologist shall survey the active construction footprint for special-status mammal, amphibian and reptile species with the potential

to be present, such as Humboldt marten, northern red-legged frog, and western pond turtle.

3. At the beginning of each workday that includes initial ground disturbance, including grading, excavation, and vegetation removal activities, the qualified biologist shall conduct on-site monitoring for the presence of these species in the area where ground disturbance or vegetation removal is planned.
4. All excavated or deep-walled holes or trenches greater than 2 feet deep shall be covered at the end of each workday using plywood, steel plates, or similar materials, or escape ramps shall be constructed of earth fill or wooden planks to allow animals to exit. Before such holes are filled, they shall be thoroughly inspected for trapped animals.
5. If a special-status species is present within the construction area, work shall cease in the vicinity of the animal, and the animal shall be allowed to relocate of its own volition unless relocation is permitted by state and/or federal regulatory agencies.
6. The contractor shall provide closed garbage containers for the disposal of all trash items (e.g., wrappers, cans, bottles, food scraps). Before work sites are closed each day, the work sites shall be cleaned of litter, and the litter shall be placed in wildlife-proof garbage receptacles. Construction personnel shall not feed or otherwise attract any wildlife. No pets, excluding service animals, shall be allowed in construction areas.
7. For Humboldt marten, a seasonal operating limitation shall be applied to identified marten core habitat which intersects the alignment in Segments 4 and 5. In these areas, no ground-disturbing construction activities would be permitted during the breeding season of Humboldt marten (March 1 to July 31).

Mitigation Measure BIO-3: Avoid Impacts on Special-Status Bats.

Before any construction, a qualified bat biologist shall conduct a preconstruction survey for roosting bats in the trees to be pruned and structures to be demolished. If no roosting bats are found, no further action is required.

If an active bat roost is found, the following measures shall be implemented to avoid impacts on roosting bats.

1. If active maternity roosts are found in trees that shall be pruned or structures to be demolished as part of construction, tree trimming or demolition of the structure shall begin before maternity colonies form (generally before March 1) or after the young are flying (generally by July 31). Active maternal roosts shall not be disturbed.
2. If a nonmaternal roost of bats is found in a tree or structure to be pruned or demolished as part of construction, the individuals shall be safely evicted, under the direction of a qualified bat biologist and with approval from CDFW. Removal of the habitat shall occur no sooner than two nights after the initial minor site modification (to alter airflow), under the guidance of the qualified bat biologist. The modifications shall alter the bat habitat, causing bats to seek shelter elsewhere after they emerge for the night. On the following day, the habitat in the tree or structure may be removed, in the presence of the bat biologist.

Nesting Birds

The Project alignment is located within mixed Douglas-fir and hardwood forests that provide activity centers and nesting habitat for migratory birds, including NSO. Bald eagles nest in trees near the Klamath River. If present, nesting birds could be directly affected by Project-related noise, light, vibration, and vehicle and human activity. Severe or repeated disturbance to nesting birds may lead to nest avoidance or abandonment, which is considered to be a significant, major impact.

APMs include APM BIO-1, which requires preconstruction surveys during the nesting season for migratory birds, and avoidance of work if nests are found. APM BIO-3 states that NSO breeding data will be reviewed to ensure that no nests are present within ¼-mile of the Project, and that work will be avoided within that distance if a nest is found. In addition, **Mitigation Measure BIO-4** below requires the Project to adhere to USFWS (2020) guidance on estimating effects of auditory and visual disturbance to marbled murrelets and northern spotted owls in northwestern California, and would apply a seasonal operating limitation on all noise-generating construction activities (e.g., pole auguring, trenching and directional drilling) until outside of nesting season, within ¼-mile of murrelet colonies in Segments 3, 4 and 5, and in NSO activity centers within ¼-mile of the alignment. With implementation of these measures, impacts on NSO and other nesting migratory birds would be less than significant and minor.

Mitigation Measure BIO-4: Avoid Impacts to Listed Birds

1. To prevent noise and visual disturbance to nesting marbled murrelets and northern spotted owls, the Project would adhere to USFWS guidance on estimating effects of auditory and visual disturbance, and would have a seasonal operating limitation on all ground-disturbing construction activities along Bald Hills Road within the RNP in old-growth redwoods. No ground-disturbing construction activities would be permitted from March 1 through September 15, as shown in Figure 2.
2. Using the technical assistance response from the USFWS (2022), the proponent would conduct NSO protocol surveys the nesting season prior to construction where prior actionable observations³ are within or very close to the ¼-mile noise buffer along the project alignment in Segment 1. In areas where activity centers have substantial and recent survey data showing abandonment by NSO, or are more than ¼ mile from the project alignment and had no actionable observations within the ¼-mile buffer during any survey, the proponent would not conduct initial surveys. Where the proponent conducts protocol surveys, any actionable observation within ¼-mile of the construction alignment shall be identified. A no-construction buffer would be established along the project alignment of ¼-mile on either side of the identified actionable observation from February 1 to July 31 that would be applicable for the year the survey was conducted and the following year until additional surveys were conducted. If protocol-level surveys conducted the following nesting season indicate no actionable observations within ¼ mile, construction activity may proceed during the season of the survey and the following nesting season. Limited operating seasons would remain in

³ An “actionable observation” is an observation of a pair (including with nesting behavior but no nest found) or a nest (including a nest with young), USFWS (2022)

place if actionable observations are recorded or if subsequent surveys are not conducted.

3. Additional limited operating season areas may be identified for NSO for historically occupied activity centers where the applicant does not conduct initial protocol surveys. Those limited operating seasons, from February 1 to July 31, would be defined along the project alignment ¼ mile on either side of historic actionable observations. In those areas, the proponent would accept the limited operating season for the duration of construction or conduct protocol surveys to determine presence of NSO. If surveys are subsequently conducted and no NSO are present, the limiting operating season would not apply in the following nesting season.
4. Where there are multiple limited operating seasons imposed in an area, the limitation would apply from the first day of the earliest restriction to the last day of the latest restriction for either of the two species.

Segment 2

Fisheries

Steelhead and Chinook salmon are likely to be present in the Klamath River in Segment 2, but would not be affected by the Project. The Project alignment would cross the Klamath River aerially via installation of new poles placed outside of the riverbed, to limit ground disturbance and avoid impacts on water features. Hence, no impacts on special-status fish are anticipated to occur in Segment 2.

Terrestrial Wildlife

Construction noise, light, and human and vehicle activity could directly disturb special-status mammals in the area, including bat species, fisher, Humboldt marten and Sonoma tree vole. Trenching, plowing, vehicles, or drilling activity could also directly injure or kill special-status mammals, reptiles or amphibians, such as southern torrent salamander, Pacific tailed frog, or Del Norte salamander. After the implementation of APMs GEO-5, GEO-9, and BIO-5, short-term impacts would remain potentially significant and major. However, implementing Mitigation Measures BIO-2 and BIO-3 would reduce impacts on special-status mammals, reptiles and amphibians to a less than significant and minor level.

Nesting Birds

NSOs nest in the vicinity of Cappell Creek, where trenching is proposed and would cause noise, lighting, and vibration disturbances from heavy construction equipment. Peregrine falcon, other raptors, and other migratory birds may also nest within Segment 2 on cliffs, in Douglas-fir, and in mixed alder forests adjacent to the Project alignment. As discussed for Segment 1, with implementation of APMs and Mitigation Measure BIO-4, potential localized impacts on nesting NSO, raptors, and migratory birds would be less than significant and minor.

Segment 3

Fisheries

The Segment 3 alignment would run along a ridgetop with few perennial channels; hence, no impacts on special-status fish are anticipated.

Terrestrial Wildlife

Few channels cross Bald Hills Road, which is located along a ridgetop; however, ditches running parallel to the road contain water for much of the year, and may provide dispersal or nonbreeding aquatic habitat for special-status amphibians, including northern red-legged frog and southern torrent salamander. Mammals including fisher, Humboldt marten, Sonoma tree vole, and pallid bat may also be present in forested areas located alongside Bald Hills Road.

Trenching, plowing, and drilling activity could directly injure or kill special-status amphibians, reptiles, or mammals, should any be present in the work area. Noise, lights, vibration, and human and vehicle activity during construction could also disturb nearby special-status wildlife species, including Humboldt marten. After the implementation of APMs GEN-5, GEN-9, and BIO-5, short-term construction-related impacts would remain potentially significant and major. However, implementing Mitigation Measures BIO-2 and BIO-3, would reduce the impacts on special-status mammals, reptiles and amphibians to a less than significant and moderate level.

Nesting Birds

Noise, lights, vibration, and human and vehicle activity during construction could disturb nearby nesting birds, including northern spotted owls. Marbled murrelets have also been recorded in Segment 3, though it is unknown if nesting colonies persist at the current time. Severe or repeated disturbance to NSO, murrelet, and other nesting birds may lead to nest abandonment. As discussed for Segment 1, with implementation of APMs and Mitigation Measure BIO-4, potential short-term impacts on NSOs, murrelets, raptors, and other migratory birds would be less than significant and minor.

Segment 4

Fisheries

Redwood Creek provides habitat for salmonid species as well as cutthroat trout, eulachon, and tidewater goby. However, the Project would avoid impacts on these species because the cable alignment would cross the creek on an existing bridge, which as explained previously, would minimize ground disturbance and present a very low risk of impacts on water features. Hence, no impacts on special-status fish are anticipated in Segment 4.

Terrestrial Wildlife

The alignment in Segment 4 would be located in a trench along Bald Hills Road. This area is waterlogged for much of the year and may provide dispersal or nonbreeding aquatic habitat for northern red-legged frog and other amphibians. Impacts on foothill yellow-legged frog are not anticipated in this location, as this species is an obligate resident of rocky, perennial streams and is not likely to be present.

Trenching, plowing, and drilling activity could directly injure or kill other special-status amphibians, reptiles, or mammals, such as fisher, Humboldt marten, or red tree vole, should any be present in the work area. Noise, lights, vibration, and human and vehicle activity during construction could also disturb nearby special-status wildlife species. After the implementation of APMs GEN-5, GEN-9, and BIO-5, these short-term impacts would remain significant and major; however, implementing Mitigation Measures BIO-2 and BIO-3, would reduce impacts on special-status mammals, reptiles and amphibians to a less than significant and moderate level.

Nesting Birds

Noise, lights, vibration, and human and vehicle activity during construction could result in disturbance to nearby nesting birds. In the vicinity of the Project alignment within Redwood National and State Parks, nesting colonies of marbled murrelets are known to be present in old-growth redwood forest stands. NSO activity centers are also present in this area of RNP in forested areas within a mile of the Project alignment (RNSP, 2014), and white-tailed kite, peregrine falcon and other migratory birds are likely to nest in the Redwood Creek watershed. Severe or repeated disturbance to nesting birds, including murrelets, may lead to nest abandonment. These impacts would be potentially significant and major; however, as discussed for Segment 1, with implementation of APM BIO-1, protecting nest sites, and APM BIO-2, which limits seasonality of construction in old growth forests, in adherence to RNP guidance, to protect nesting murrelets, and Mitigation Measure BIO-4, potential short-term impacts on NSOs, raptors, murrelets, and other migratory birds would be less than significant and minor.

Segment 5

Fisheries

Tom Creek, McDonald Creek, and other perennial waterways in Segment 5 provide habitat for coast cutthroat trout, salmonids, and potentially for tidewater goby. However, the Project would not affect these species, as fiber optic cable would be either hung on existing poles or installed under watercourses via directional drilling, which, as explained in Chapter 2, involves drilling underneath watercourses using a horizontal drill site located outside the stream channel. This technique is designed to ensure that no adverse effects on the watercourse would occur. Hence, no impacts on special-status fish are anticipated in Segment 5.

Terrestrial Wildlife

The majority of the cable in Segment 5 would be hung on existing PG&E power poles, with limited trenching occurring south of GDR lands in residential areas. Therefore, construction activities would not affect waterways that provide habitat for southern torrent salamander and northern red-legged frog and would not require trenching, drilling, or other ground disturbance in areas of forested habitat. Forests in Segment 5 are primarily second-growth redwood with limited understory, that are unlikely to host Humboldt marten or fisher.

Avoiding trenching, plowing, and drilling activity would greatly reduce potential impacts on terrestrial wildlife; however, human or vehicle traffic during construction could injure or kill special-status amphibians in roadside ditches, or reptile or mammal species, such as tree voles, should any be present in the work area. Noise, lights, and human and vehicle activity during construction could also disturb nearby roosting bats. After the application of APMs GEN-5,

GEN-9, and BIO-5, these short-term, localized impacts would remain potentially significant and major. However, as described for Segment 1, implementing Mitigation Measures BIO-2 and BIO-3 would reduce impacts on special-status mammals, reptiles and amphibians to a less than significant and moderate level.

Nesting Birds

Construction activity involving human and vehicle traffic, noise, light, and vibration may disturb nearby nesting migratory birds, including northern spotted owls. Marbled murrelets have also been recorded in Segment 5, though it is unknown if nesting colonies persist at the current time. Severe or repeated disturbance to NSO, murrelet, and other nesting birds may lead to nest abandonment and reproductive failure. These short-term, localized impacts would be potentially significant and major; however, as discussed for Segment 1, with implementation of APM BIO-1, protecting nest sites, and APM BIO-2, which limits seasonality of construction in old growth forests for protection of sensitive species, including murrelets, and with implementation of Mitigation Measure BIO-4, potential impacts on NSOs, raptors, and other migratory birds would be less than significant and minor.

Significance after Mitigation: Less than significant and moderate.

b) Have a substantial adverse impact on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by CDFW or USFWS. *Less than Significant; Localized; Minor.*

Sensitive natural communities found that could be affected by the Project include old-growth redwood forest in Segment 4, riparian scrub in isolated areas in Segments 1, 2, 3, and 4, and willow/cottonwood forest in Segment 4.

Old-growth redwood groves exist in lowland patches within RNP in Segment 4, surrounded by second-growth redwood and Douglas-fir forest. Old-growth forest is favored nesting habitat for the marbled murrelet and NSO. Trees in old-growth forests typically have shallow, wide-ranging root systems that are easily damaged by construction activities, including trenching, plowing, and drilling. These potential impacts would be significant and major.

Riparian scrub occurs in all segments, along the Klamath River, Little River, and portions of Redwood Creek along the channels, with alder and willow trees and a sparse covering of shrubs and grassy understory. Riparian scrub provides nesting habitat for many migratory birds, and the channels provide habitat for special-status amphibians and a corridor for many wildlife species. Construction activity could directly damage this habitat in the short term, or could indirectly promote the spread of invasive weeds in the long term by disturbing existing vegetation and potentially transporting weed seeds on tires or material. This potential impact would be significant and major.

Mature willow/cottonwood forest occurs in limited patches in Segment 4 and represents a later seral stage of riparian development. It has greater habitat complexity than scrub habitat, and provides habitat for many species of migratory birds, mammals, reptiles, and amphibians. Construction activity in riparian habitats, such as drilling or erosion, could directly damage or

destroy the local riparian vegetation in the short term and indirectly damage aquatic habitat by spreading invasive weeds or increasing sedimentation in waterways over the long term. These potential impacts would be significant and major.

APMs would be implemented to address these potential impacts. APM SOIL-1 would ensure that soil and vegetation removal would be limited to the minimum area necessary for access and construction. APMs WEED-1, WEED-2, and WEED-3 call for contractors to be trained on weed identification to help avoid infestations; ensure that materials brought to the site are from weed-free sources; and ensure that equipment and vehicles are free of soil and debris that may transport weeds to the site. Training workers, using weed-free source material, and cleaning vehicles and equipment would minimize the spread of weeds into disturbed areas. APM GEN-5 requires the use of directional drilling where needed to avoid sensitive habitat areas. Minimizing the area of soil and vegetation removal would protect riparian areas, and directional drilling would be used to avoid drilling in sensitive riparian habitat. Thus, implementing these APMs would minimize disturbance to sensitive riparian habitats and reduce potential impacts to a less than significant and minor level.

Additional APMs would protect old-growth redwood communities. APM BIO-2 applies seasonal restrictions for construction in old-growth forests in RNP, as specified by NPS or GDR policy. APM BIO-4 states directional drilling will be used in areas of old-growth redwood roots. With implementation of these measures, plowing and trenching in redwood root zones would be avoided, and impacts on old-growth redwood communities would be less than significant and minor.

Mitigation: None required.

c) Have a substantial adverse effect on federally or state protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means. *Less than Significant; Localized; Minor.*

Waters of the United States are present within the alignment in the Klamath River and Redwood Creek watersheds, and in numerous perennial waterways traversed by the alignment (Figure 4.4-1). A jurisdictional delineation has not yet been conducted; however, the Project alignment crosses a number of ephemeral streams and roadside ditches with flowing water that could also be jurisdictional waters. National Wetlands Inventory data indicate that freshwater emergent and forested/shrub wetland are present in Segments 1, 2, 4, and 5. No wetlands are apparent along Segment 3 (USFWS, 2020b).

Wetlands could be directly affected by filling, or indirectly affected by sediment delivery from ground disturbance. In Segment 5, existing utility poles would be used for cable installation, with directional drilling under culverts where trenching is needed. These methods would minimize impacts on perennial streams and associated wetlands. Where possible, impacts on wetlands and waters would be reduced by attaching the cable to an existing crossing, such as a bridge or culvert, avoiding the need for any construction within or near to any wetland or water body. To further minimize potential impacts on wetlands and other waters, several APMs would be implemented as part of the Project. APM GEN-5 requires directional drilling where needed to

avoid impacts on water, biological, and cultural resources. APM WET-1 states that wetland delineations will be performed/updated before construction in support of Clean Water Act (CWA) Section 404 permitting to minimize Project impacts. These delineations would identify both wetland and non-wetland waters of the United States and waters of the state that could be affected by the Project.

APMWET-2 states that where impacts on wetlands are not avoidable, site-specific crossing plans and measures to mitigate impacts will be submitted to the appropriate regulatory and land management agencies, and the Applicant will obtain all necessary permits before discharging dredged or fill material to waters of the United States or state. Finally, APM WET-3 states that if trench dewatering is needed, it will be completed per Caltrans BMP NS-2 specifications and the *Field Guide to Construction Site Dewatering*.

With implementation of these APMs, both short- and long-term impacts on wetlands and other waters would be avoided and minimized to the maximum extent possible, in coordination with state and federal permits. Thus, impacts on wetlands and waters would be less than significant and minor.

Mitigation: None required.

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites. *Less than Significant; Localized; Minor.*

Habitat connectivity and maintenance of functional movement corridors between natural areas is essential to sustaining populations and allowing the continued dispersal of native plant and animal species. Natural linkages include riparian corridors and drainages, undeveloped ridgelines, and corridors across the valley floor. These connections allow wildlife movement and plant dispersal in areas where impermeable barriers such as heavily traveled roadways would otherwise eliminate connectivity. The alignment crosses numerous waterways that provide wildlife corridors and nursery sites for fish, but the Project would minimize potential impacts on these resources by using existing poles, bridges, and culverts to hang cable and by undertaking directional drilling under watercourses to prevent impacts and avoid interference with wildlife corridors.

In Segments 1 and 2, the Project would be constructed along existing roadways that already create a barrier to wildlife movement; the Project would not alter this condition. In Segments 3 and 4, the alignment would be located in a trench along Bald Hills Road, a ridgetop road that likely provides a migratory corridor for deer, elk, and other large mammals, and along former logging roads. Construction along these roads would temporarily directly impede wildlife movement, but these effects would be localized and short term. During operation of the Project, there would be no impact on wildlife movement along these roads. Thus, impacts on wildlife corridors and nursery sites would be less than significant and minor.

Mitigation: None required.

e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance. *Less than Significant; Localized; Minor.*

The Project is located in Humboldt County and the biological standards and ordinances for the county are listed above in Section 4.4.2. The Conservation and Open Space Elements of the Humboldt County General Plan (Humboldt County, 2017) contain comprehensive policies, standards, and implementation measures to maintain and enhance protections for streams, wetlands, and other sensitive areas. The policies, standards, and implementation measures in the Biological Resources section (10.3) of Conservation and Open Space Elements are more protective of biological resources than previous local policies and ordinances. The policies, standards, and implementation measures for streamside management areas, wetlands, and other sensitive areas increase the buffers for these habitats. The Project would adhere to these buffer areas during cable installation by using directional drilling, and by placing vault boxes outside of the top of bank. The ordinances include a recommendation for a landmark tree ordinance to protect important trees in the county, but such trees have not yet been identified. No mature trees are proposed for removal as part of the Project (Karuk Tribe, 2020); therefore, the Project would not affect any potential landmark trees.

Therefore, the Project would not conflict with any existing policies and ordinances related to biological resources. This impact would be less than significant and minor.

Mitigation: None required.

f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or state habitat conservation plan. *Less than Significant with Mitigation; Minor.*

GDR adopted an HCP for aquatic resources in 2007. The HCP covers a 50-year period ending in 2057 and addresses impacts on Chinook salmon, coho salmon, steelhead (and rainbow trout), coastal cutthroat trout, Pacific tailed frog, and southern torrent salamander from increases in sedimentation, turbidity, and temperature in aquatic habitat. To address these issues, GDR applies BMPs for road management, a road assessment process that may involve temporary or permanent road decommissioning, or road upgrading. The HCP provides substantial protection of riparian forest stands and geologically unstable areas, resulting in little or no timber harvest in substantial portions of the timberlands. The estimated sediment reduction over 15 years is projected to be more than 3.0 million cubic yards of reduced delivery to the Klamath River watershed, helping to meet U.S. Environmental Protection Agency water quality standards for the river (GDR, 2017).

For terrestrial resources, an NSO HCP was initiated in 1992 for a 30-year period with GDR's predecessor to allow timber harvesting and management in NSO habitat. As conditions for its incidental take permit for NSO, GDR conducted research into habitat use, and has optimized forest management to support NSO nesting stands and nests for dusky-footed woodrat (the owl's primary prey in the area). More recent research has studied the impact of NSO competition with barred owls (*Strix varia*). GDR plans to replace the NSO HCP with a broader Forest HCP for terrestrial species, including both NSO and three mammals that may become listed: fisher, Sonoma

tree vole, and red tree vole. The Forest HCP will provide for research and monitoring and incorporate conservation measures for these species that build on those in the NSO HCP (GDR, 2017).

Construction of Segment 5 on GDR lands would involve attaching cable to existing PG&E poles, thus avoiding trenching and the potential for erosion and impacts on waterways. The Project would result in no direct impacts on waters that provide aquatic habitat to HCP species. Construction would adhere to seasonal restrictions on access to the logging roads to minimize impacts on special-status species as discussed above, via APMs and Mitigation Measures BIO-1 through BIO-3. Maintenance of the line would be undertaken via vault boxes, which would be installed at regular intervals. Maintenance would adhere to the Mitigation Measures Bio-1 through BIO-3, which contain operating limits to protect habitat as well as the seasonal road restrictions presented in the aquatic HCP. Through adherence to seasonal restrictions in the HCPs and avoidance of aquatic resources, conflicts with the HCPs would be minimized, and this impact would be less than significant with mitigation and minor.

Mitigation: None required.

4.4.5 NEPA Alternatives

No-Project Alternative

Under the No-Project Alternative, the Project would not be implemented, and the existing environmental setting would be maintained. Thus, under the No-Project Alternative, impacts of Project construction, operation, and maintenance on biological resources that are described above would not occur.

4.5 Cultural Resources

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
5. CULTURAL RESOURCES—Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to §15064.5?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
d) Cause an adverse change in the significance of a tribal cultural resource, defined in PRC Section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe.?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

This section describes cultural resources (including architectural resources, archaeological resources, tribal cultural resources, traditional cultural properties, human remains, and Indian Trust Assets) and the regulatory framework that governs those resources; defines the significance criteria used for the impact assessment; and analyzes potential direct and indirect effects on cultural resources. The cultural resources assessments completed for the Project were used as background information and data sources for this section (Karuk Tribe, 2020; Yurok Tribe, 2017; Rich and Watts-Tobin, 2021).

4.5.1 Environmental Setting

Definitions

Cultural Resource

Cultural resource is a term used to describe both archaeological sites (precontact and historic) depicting evidence of past human use of the landscape through material culture and the built environment.

Architectural Resource

Architectural resources include historic-era buildings, structures, objects, and districts. Architectural resources that are listed in or are eligible for listing in the National Register of Historic Places (National Register) are considered *historic properties*. Architectural resources that are listed in or are eligible for listing in the California Register of Historical Resources (California Register) are considered *historical resources*.

Archaeological Resource

Archaeological resources consist of precontact or historic-era archaeological resources. Precontact archaeological site indicators in the field would predominantly include stone tools of chert and obsidian, stone tool debitage, ground stone implements, milling stone features, locally darkened midden soils, possibly shell and/or bone debris, pit features and rock alignments. Site types associated with Native American religious activity could include cupule boulders, rock rings and prominent outcrops, as well as human burials. Historic period cultural resources associated with homesteading, and mining were known to be located in the Project vicinity. Expected historic period cultural resource indicators include tailings, mine cuts, tunnels, standing or ruined buildings, ceramic, glass, or metal artifacts, standing structures, trails, roads, and ditches. Similar to historic-era architectural resources, archaeological resources that are listed in or are eligible for listing in the National Register are considered historic properties and archaeological resources that are listed in or are eligible for listing in the California Register are considered historical resources. In addition, archaeological resources can be considered *unique archaeological resources* under CEQA.

Tribal Cultural Resource

A *tribal cultural resource* is defined as a site feature, place, cultural landscape, or sacred place or object that is of cultural value to a tribe and is either in or eligible for listing in the California Register or a local historic register; or the lead agency, at its discretion, chooses to treat the resource as a tribal cultural resource.

Traditional Cultural Property

A *traditional cultural property* is a property with significance based on its associations with the cultural practices, traditions, beliefs, lifeways, arts, crafts, or social institutions of a living community. Traditional cultural properties are rooted in a traditional community's history and are important in maintaining the continuing cultural identity of the community.

Indian Trust Asset

Indian Trust Assets (ITAs) are legal interests in property held in trust by the United States for federally recognized Indian tribes or individual Indians. ITAs have three components: (1) the trustee, (2) the beneficiary, and (3) the trust asset. ITAs can include land, minerals, federally reserved hunting and fishing rights, federally reserved water rights, and instream flows associated with trust land. Beneficiaries of the Indian trust relationship are federally recognized Indian tribes with trust land of which the U.S. is the trustee. By definition, ITAs cannot be sold, leased, or otherwise encumbered without approval of the U.S. The characterization and application of the U.S. trust relationship has been defined by case law that interprets congressional acts, executive orders, and historic treaty provisions.

Project Area of Potential Effects

The terms *Project area* and *Area of Potential Effects* (APE) are used interchangeably in this document. The Project area/APE is defined as “the geographic area or areas within which an

undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist” (Title 36, Section 800.16[b] of the Code of Federal Regulations [36 CFR 800.16(b)]). An APE accounting for direct effects of the Project (termed *Area of Direct Impact or ADI*) and an APE accounting for indirect effects of the Project (termed *Indirect APE*) have been established for the Project.

Depending upon the Project components, the ADI for the proposed Project includes areas of ground disturbance, staging areas, access, and work areas. The ADI is linear and has a narrow width of approximately 10 feet. The ADI accounts for the area needed for accessing the roadside for constructing a trench, boring, and installing connection boxes. An extra 10 feet was added to either side to account for work areas. This total APE measures 30 feet wide and is designed to account for the potential effects to archaeological, historical architectural, and other tangible cultural resources.

Trenching will average 6 to 12 inches wide and 36 inches deep. The area of direct ground disturbance assumes a maximum width of 4 feet for equipment and personnel. Directional drilling will require deeper excavations and installation, extending below surface to a maximum of 20 feet, including entry and exit pits. Drill pits are established at each end of the directional drill designated areas. Ground conditions may require slight movement of the drill pits to avoid hard rock. It is expected that these pits could reach as large as 100 square feet and designed over a road edge or inboard ditch.

No excavation or grading will occur in the staging areas; therefore, staging areas will include the horizontal extent and a minimal depth (less than 6 inches) from potential disturbance relating to the placement and movement of personnel and heavy equipment.

Indirect Area of Potential Effect

To provide for adequate consideration and evaluation of the indirect auditory and visual impacts that could occur during construction, and the possible indirect visual impacts from standard utility markers used to indicate underground installations, an indirect APE of 0.5 mile on either side of the Project centerline was established. This area is also called the Study Area in this document. This includes areas within Redwood National Park (RNP) within historic and archaeological districts.

Approximately half of the Project route will be installed on existing distribution and transmission utility poles. These areas will have no ground disturbance, except for the potential to install supporting guy wires. This portion of the Project was assessed for potential visual impacts to and from nearby cultural sites by the Karuk Tribe and in coordination with the Yurok and Wiyot Tribes. Because no impacts were identified, the overhead installation portion of the Project was not included in the APE description. Installations on Orleans Mountain and Antenna Ridge have also been analyzed as part of the indirect APE.

Natural and Cultural History

This section has been adapted from sources provided by the Applicant and Yurok Tribe (Karuk Tribe, 2020; Yurok Tribe, 2017; Rich and Watts-Tobin, 2021).

Natural Environment

The Project would be located in the Klamath River valley from Orleans to Wautec following existing state highways (Segments 1 and 2), over the Coast Ranges to the west coast following Bald Hills Road (Segments 3 and 4), through the coastal plain in the town of Orick, following U.S. Highway 101 (U.S. 101) (Segments 4 and 5), then in the coastal hills and valleys south to the AT&T Central Office in McKinleyville (Segment 5). Below is a description of habitat and vegetation by Project component.

Segment 1

This segment would mostly follow State Route (SR) 96, and also cross Slate and Bluff Creeks, with cable being hung on bridges at these two river crossings. The roadside vegetation within this segment is dominated by introduced invasive species such as Dyers woad, Scotch broom, star thistle, chicory, Himalayan blackberry, and English ivy. Adjacent terrestrial habitats include mixed Douglas fir and hardwood forests and developed residential land parcels. Where the highway crosses perennial streams, the adjacent vegetation is typically alder-dominated riparian forest with willows and Himalayan blackberry in the understory.

Segment 2

All of Segment 2 is located within the Yurok Indian Reservation and essentially follows SR 169 within areas of conifer and hardwood forests disturbed by existing roadways, utility poles, and ongoing associated maintenance activities. As in Segment 1, roadside vegetation includes mostly invasive annual and perennial plant species. Adjacent vegetation includes mixed Douglas fir and hardwood forests.

Segment 3

Segment 3 follows Bald Hills Road from Tully Creek Road to Johnson Road, through mixed Douglas fir and hardwood forests, many of them recent plantations, until reaching the RNP boundary and the beginning of the meadows or “balds” that give the road and the area its name. The meadows are remnants of much larger meadows that were maintained through routine application of intentional Native American burning before Euroamerican settlement began around 1850. Douglas fir and other trees have steadily invaded these meadows since suppression of burning became common in the late 1800s and early 1900s. The segment terminates at Elk Camp in a mixed young-growth redwood/Douglas fir/hemlock forest.

Segment 4

Segment 4 follows Bald Hills Road from Johnson Road to Orick and crosses Redwood Creek, mainly through mixed young-growth redwood/Douglas fir/hemlock forest stands along ridges and through several groves of old-growth redwoods, the best known being the Lady Bird Johnson Grove. This segment travels through the Redwood Creek floodplain with alders and other

facultative wetland species, as well as non-native invasive species like Himalayan blackberry just before the intersection with U.S. 101. Terrestrial habitats are predominantly developed residences, commercial buildings, and pasture along this stretch of U.S. 101. Aquatic habitat at the Redwood Creek crossing includes alders and willows.

Orick Tower

The Orick Tower is proposed for construction in agricultural land, adjacent to a barn and driveway. Surrounding vegetation is grass, and domestic cattle are the predominant animal life.

Segment 5

Segment 5 extends through vegetation of young-growth redwoods with an understory of dense brush, hardwoods, and other conifers such as Douglas-fir. This portion of the RNP was acquired in 1978 to protect the Redwood Creek watershed and was logged shortly before purchase, making adjacent trees around 40 years old for much of the route. The Project leaves REDW and continues through industrial timberland to its end in the commercial business area in McKinleyville.

Yurok Signal Connection (Antenna Ridge)

The Antenna Ridge component of the Yurok signal connection would be on a rocky ridge with adjacent scattered shrubs.

Cultural History

Karuk

According to Kroeber's estimates in 1925, the Karuk Tribe's population was more than 3,000 when European Americans first arrived in the area in 1850; the Karuk Tribe still has more than 3,000 members. Although removals and massacres followed Euroamerican settlement, Kroeber (1925) estimated that the population never fell below 775, the estimated population in 1910. L. L. Kidder wrote a diary of his arrival in the area in March 1850 and described his experience with the Native people:

Up to the time we arrived at the Klamath River [along a mountain trail from Trinidad towards mine works on the Salmon River] we had not seen any Indians, but now they were very numerous and there was a large village of them at the ferry. They were the best looking and most intelligent looking Indians we had met in the state, and, the whites having never mingled with them, they seemed very friendly and came around and endeavored to learn our language... They lived in quite good houses, which we had never seen Indians do before, they having so much beautiful and free splitting timber that they could split out planks nearly as nicely as they could be sawed.

The Karuk at that time lived in more than a hundred villages sited along the Klamath River and tributaries. Of these, 12 (Bright villages #106–117) lie close to the river between Orleans and Aikens Creek. Of these 12, three have been covered thoroughly by cultural resources surveys: Aikens Creek, Red Cap Bar, and opposite Savorum Mountain. The exact locations of these and other Tribal resources are confidential and kept at the Karuk Tribal Historic Preservation Officer (THPO) office. From an archaeological perspective, a village site would likely contain house pits,

middens, burials, and other features. Furthermore, these villages form a nexus for trails, gathering areas, and spiritual areas.

Yurok

Traditionally, Yurok people living on the upper region of the Klamath River are known as *Pe-cheek-lah*, people living on the lower region of the Klamath River are known as *Puelik-lah*, and those on the coast are known as *Ner-er-ner*. The term *Oohl* translates to “Indian people,” and describes all Yurok people together. The name *Yurok* comes from the Karuk word for “downriver,” which is the most widely used word to describe the Tribe and people.

There are more than 70 known villages within the ancestral Yurok territory, most of which are along the Klamath River and Pacific Coast.

Within each village, houses were constructed primarily of redwood and each house had a name. Families and descendants are associated with these specific house names. Families and/or houses within villages owned specific resource-gathering areas such as fishing holes, acorn-gathering spots, trapping areas, and hunting locations. Glen Moore Sr., who was from the village of *Srey-gon*, explained in an interview in 1996 that “most Indian people had fishing spots, they have the right to fish. Sometimes its [fishing hole] is handed down through relations. You can give a fishing place to someone else.” The sweathouse is another structure that was found within each village. Men typically did not spend the night in family houses; instead they stayed in the sweathouse. The sweathouse was also used for ceremonial purposes such as purification before hunting or ceremonies.

Yurok villages were situated along rivers and the coast near resource-gathering areas such as good fishing access or coastal gathering sites. River villages were on ancient river terraces and locations decreased in elevation the farther down river they were, providing easy access to fishing holes along the Klamath. Coastal villages were along lagoons or mouths of rivers, adding additional food resources to ones provided by the ocean. The mountain areas above the water areas were mostly used for gathering and hunting. An elaborate trail system connected villages, prayer sites, and gathering areas. Trails were treated with respect and travelers were to stay within the trail. Many of the traditional trail systems are still in use today, as many current highways and arterial routes lie on top of the old trails, including SR 169 and Bald Hills Road.

The river is vital part of Yurok life, providing food resources such as salmon, sturgeon, eel, and other fish. Gill nets, dip nets, weirs, basket traps, and hooks are used to obtain fish from the river. On the coast, many species are harvested for consumption, including mussels, clams, seaweed, and many others. The primary game for hunting is deer and elk, but other, smaller animals are also eaten. The other primary food source for the Yurok is acorns. Acorn-gathering grounds and camps are found throughout the mountains and prairies in Yurok territory. Acorns are processed into a mush, which is cooked in large baskets with hot stones.

Wiyot

The Study Area lies within the traditional territory of the Patawat division of the Wiyot Indian Tribe. This group occupied lands from Little River to south of Mad River, while two other divisions of the tribe inhabited areas farther south.

The Wiyot language has been categorized as Algonquian-based. The name *Wiyot* is derived from the Yurok term *weyet* or *weyot*; the Yurok Tribe, which lived to the north, also spoke a language classified as Algonquian. Although the Wiyot and Yurok languages are distinctly different, linguists have linked the two in “a provisional group called Ritwan” that is alternatively classified as Algic. Linguistic research implies that the two groups are distantly related, and this “unlikely Yurok-Wiyot proximity” has been hypothetically explained as “parallel migrational responses by two similar but separate groups at different times to similar geographic and ecological pressures and/or opportunities.” According to Humboldt State University professor and California native linguist Victor Golla, the Wiyot arrived in the Humboldt Bay area approximately 2,000 years ago, inhabiting a lagoon environment that afforded the use of coastal resources. The Yurok came at a later date, subsequent to the arrival of the first Athabascan speakers, who arrived sometime within the last 1,400 years.

Interviews with Wiyot tribal members born in the mid-19th century have provided at least a partial picture of what the traditional lifestyle may have been like. The photographer and ethnographer Edward S. Curtis relates that “Wiyot houses were like those of the Klamath river tribes, with plank walls and gabled roof, and a deep excavation occupying the greater part of the enclosed square.” Ethnographer L. L. Loud describes a slightly different structure with a shallow pit in the center, and also tells of sweat houses that were half subterranean and “at least sixteen feet square.” Wiyot redwood canoes were similar to those of the Yurok and were used primarily on the bay and rivers, although “in calm weather [the Wiyot] sometimes fished outside the heads.”

Animals were hunted or caught in various ways. Elk were pursued by a hunter and his dogs in a running chase that could last as many as two days. Deer and sometimes elk were caught in rope snares. Bears were trapped in deadfalls, or, if hibernating in a hollow log, suffocated by smoke after the openings had been partially blocked. Waterfowl were hunted from blinds; the expenditure of “thirty to forty wooden-pointed arrows would succeed in killing perhaps six or eight waterfowl out of a flock.” Salmon might be taken in gill nets or in either of two types of fish weirs. Smelt were caught in surf nets and other fish by other means. Clothing was mostly made from deer skins. Women and girls wore basketry caps. Basket-making materials included spruce and willow roots, bear grass, maidenhair and Woodwardia ferns, and a dye made from alder bark juice. The women wove twine baskets for carrying and cooking foods.

The principal line of travel and communication linked the following three geographical divisions of the Wiyot:

- The Batawat (Patawat), or northern division, which inhabited the Mad River from its mouth to Blue Lake, the coast from Mad River to Little River, and the inland areas of McKinleyville and Fieldbrook.

- The Wiki, or central division, which occupied the Humboldt Bay shoreline, islands, and local areas environs.
- The southerly Wiyot, which occupied the lower Eel River.

Known sites of the Patawat Wiyot near the Study Area were virtually all on the coast.

Place Names in the Study Area

The earliest records of this area come while taking on “wood and water” at Trinidad Bay, by the Hezata Expedition of 1575. Coming upon a stream, Hezata named it the *Rio de las Tortolas* (river of the doves), which, it appears, was what is now called Little River. Hezata’s party traveled up the river a “half a league from its mouth” (a distance of about 1.5 miles). The various reports made at the time do not indicate the presence of a village or dwellings in the vicinity. In 1849, the Josiah Gregg Party reached the coast at Little River, went north, and then returned south, crossing the river on their way toward Humboldt Bay. L. K. Wood, in his account of the journey, makes no mention of encountering Indians at or near the river.

The principal ethnographers who wrote about the Wiyot and Yurok Tribes both claim that village sites and other named locations were within the vicinity of the Study Area. T. T. Waterman mentions five places named by the Yurok:

1. *Okweges*—“where the people get strawberries”—near the mouth of Strawberry Creek.
2. *Oksolig*—“where he fell” or “where they painted him”—in the dune area approximately due west of today’s Crannell Road interchange.
3. *Rtskrgrn*—“everybody looked”—the large rock north of Little River now known as Princess Rock.
4. *Srepor*—a village on the north side of Little River near the north end of Moonstone Beach that at one time had four houses and a sweathouse.
5. *Metsko*—name of Little River.

L. L. Loud lists five Wiyot locations in the Study Area:

1. *Dolokoli*—a site near the mouth and on the south side of Widow White Creek.
2. *Kwesperkogoli*—Strawberry Creek.
3. *Itchgaro*—Little River—name said to refer to a kind of footprint in the flat rock at the crossing.
4. Site 2—*Pletkosomili* and “rock-small”—a village near the mouth of Little River that seems to be consistent with *Srepor*.
5. Site R—camping place at the head of Lindsey Creek for gathering topodreos or “wild potato.”

Birdie James, who “was partly of Yurok descent” but helped J. P. Harrington with Wiyot culture, indicated that the big rocks on the beach at Little River was “as far as they [the Yurok] came.” Birdie James was familiar with a wild strawberry patch at the Worth property (north of the

McKinleyville airport); it was called *gwxs bxgaxlim*. The two closest named Wiyot locations were Strawberry Creek, to the north, and Widow White Creek, to the south.

Post-contact History of the Study Area and Vicinity

While the first Europeans arrived by boat along the coast starting as early as the late 1700s during the fur trade, the explosion of Euroamerican settlers started with the discovery of gold in 1849 and the arrival of gold miners starting in 1850. Gold miners made their way into the Study Area in the early 1850s.

The early Euroamerican settlers of Orleans had a complicated relationship with the local Karuk population. As miners and other settlers moved into the region, the riverine ecology that the Karuk depended on became impacted by overhunting, buildup of sediments in the water, and marked increase of human population. Early settlers like William Reece, John Pearch, Grant Hillman, and Alma Allen took Native American wives. Their children were prominent members of the community of Orleans that grew around these early miners and farmers; their descendants became prominent members of the Karuk tribe in the area. Local Karuk are often listed on the early census sheets as laborers, miners, and fishermen.

By 1828, the area was gaining attention because of the reports back from the American expeditions, despite the news that the local terrain was rough. The most well-known trapping expedition of this era was led by Jedidiah Smith. Smith guided a team of trappers through the local area, coming down through the Yurok village of *Kep'-el*, crossing over Bald Hills, and eventually making their way to the villages of *O men* and *O men hee-puer* on the coast. Smith's expedition, though brief, was influential to all other trappers and explorers. The reports from Smith's expedition resulted in more trappers exploring the area and eventually leading to an increase in non-Indian settlement.

By 1849, settlers were quickly moving into Northern California because of the discovery of gold at Gold Bluffs near present-day Orick and Orleans on the Klamath River. Yurok and settlers traded goods and Yurok assisted with transporting items via dugout canoe. However, this relationship quickly changed as more settlers moved into the area and demonstrated hostility toward Indian people. With the surge of settlers moving in, the government was pressured to change laws to better protect the Yurok from loss of land and assault. The rough terrain of the local area did not deter settlers in their pursuit of gold. They moved through the area and encountered camps of Indian people. Hostility from both sides caused much bloodshed and loss of life.

The gold mining expeditions resulted in the destruction of villages, loss of life, and a culture severely fragmented. By the end of the Gold Rush era, at least 75 percent of the Yurok people had died due to massacres and disease, while other tribes in California saw a 95 percent loss of life. While miners established camps along the Klamath and Trinity Rivers, the federal government worked toward finding a solution to the conflicts, which dramatically increased as each new settlement was established.

The government sent Indian agent Redick McKee to initiate treaty negotiations. Initially, local tribes were resistant to come together, and some outright opposed meeting with the agent. The

treaties negotiated by McKee were sent to Congress, which was inundated with complaints from settlers claiming the Indians were receiving an excess of valuable land and resources. Congress rejected the treaties and failed to notify the tribes of this decision. In 1855, a group of “vigilante” Indians (who were known as Red Cap Indians) initiated a revolt against settlers.

The federal government established the Yurok Reservation in 1855 and Yurok people were immediately confined to the area. The reservation was considerably smaller than the Yurok original ancestral territory. This presented a hardship for Yurok families who traditionally lived in villages along the Klamath River and northern Pacific coastline. When Fort Terwer was established, many Yurok families were relocated and forced to learn farming and the English language.

In January 1862, Fort Terwer was washed away by floodwaters, along with the Indian agency at *Wau-kell* flat. Several Yurok people were relocated to the newly established reservation in Smith River that same year. However, the Smith River Reservation was closed in July 1867. Once the Hoopa Valley Reservation was established, many Yurok people were sent to live there, as were the Mad River, Eel River, and Tolowa Indians.

In the years following the opening of the Hoopa Valley Reservation, several squatters on the Yurok Reservation continued to farm and fish in the Klamath River. The government’s response was to use military force to try to evict the squatters. Many squatters did not vacate and waited for military intervention, which was slow to come. In the interim, the squatters pursued other avenues to acquire land.

Fort Terwer and the Indian agency at *Wau-kell* were built from redwood, which was an abundant resource and culturally significant to Yurok. Non-Indians pursued the timber industry and hired local Indian men to work in the up-and-coming mills on the Hoopa Valley Reservation. This industry went through cycles of success and was largely dependent on the needs of the nation. At the time, logging practices were unregulated and resulted in the contamination of the Klamath River, depletion of the salmon population, and destruction of Yurok village sites and sacred areas.

Western education was imposed on Yurok children beginning in the late 1850s at Fort Terwer and at the Indian agency at *Wauk-ell*. This form of education continued until the 1860s, when the fort and agency were washed away. Yurok children, sent to live at the Hoopa Valley Reservation, continued to be taught by missionaries. The goal of the missionary style of teaching was to eliminate the continued use of cultural and religious teachings that Indian children’s families taught. Children were abused by missionaries for using the Yurok language and observing cultural and ceremonial traditions.

In the late 1800s, children were removed from the Hoopa Valley Reservation to Chemawa, in Oregon, and Sherman Institute, in Riverside, California. Today, many elders look back on this period in time as a horrifying experience because they lost their connection to their families and culture. Many were not able to learn the Yurok language and did not participate in ceremonies for fear of violence being brought against them by non-Indians. Some elders went to great lengths to escape from the schools, traveling hundreds of miles to return home to their families. They lived with the constant fear of being caught and returned to the school. Families often hid their children when they saw government officials.

Humboldt County, organized in 1853, was named after Baron Alexander von Humboldt, scientist and traveler. The community of Orleans is in a portion of Humboldt County that was a part of the disestablished Klamath County, formed in 1851 and later disbanded in 1874. Eureka was granted a town charter in 1856 and has been the Humboldt County seat since.

Many miners of both Euroamerican and Chinese ancestries located and mined in Orleans. Commercial activity promptly developed around the mining activity, including stores, pack trains, restaurants, bars, and at least one hotel in the Project area, in Orleans and Weitchpec. The Bald Hills route generally followed a Native American route and was used extensively for pack trains, as was the route that has become SR 96 from Willow Creek to Orleans.

As gold mining in the Study Area died out in the early 1900s, there was limited commercial extraction of timber outside of the redwood zone, though redwood logging had started in the 1850s in the Eureka area and continues to the present. Redwood logging continues near Segments 3, 4, and 5. Douglas fir logging became prevalent with the improvement of saws and the invention of plywood during and after World War II. Non-redwood logging, managed by the U.S. Forest Service (USFS) on National Forest lands, was big business in the Project area, including Segments 1, 2, and 3, from 1950s to the mid-1990s. As during the mining boom, commercial businesses supporting the logging industry were established in the Project area, including logging companies, trucking companies, and various sawmills, large and small. A veneer mill, producing the veneer needed to make plywood, was active in Orleans from 1955 to 1974.

Logging continues on private lands in and near the Study Area, but has been largely curtailed in the National Forest since the 1990s. Beginning in the 1960s, in small, hidden patches, often on National Forest lands, marijuana (cannabis) cultivation and sale became an increasingly large part of the area's informal economy.

Native American Communications

On December 11, 2017, William Rich and Associates (WRA), on behalf of the Applicant, sent a letter to the California Native American Heritage Commission (NAHC) requesting a search of the Sacred Lands File and a current list of Native Americans who might have knowledge of cultural resources in the Project area. The NAHC responded on December 19, 2017, indicating that the Sacred Lands File had no record of sacred sites in the Project area, and providing a suggested list of Native American individuals to contact regarding the Project. On January 22, 2018, WRA contacted the following tribal representatives via email/letter:

- Bear River Band of the Rohnerville Rancheria—Barry Brenard, Chairperson; Erika Cooper, THPO (email).
- Big Lagoon Rancheria—Virgil Moorhead, Chairperson.
- Blue Lake Rancheria—Claudia Brundin, Chairperson; Janet Eidsness, THPO (email).
- Hoopa Valley Tribe—Ryan Jackson, Chairperson (email); Keduescha Lara-Colegrove, THPO (email).
- Karuk Tribe—Russell Atteberry, Chairperson; Alex Tobin-Watts, THPO (email).

- Round Valley Reservation—James Russ, President.
- Trinidad Rancheria—Garth Sundberg, Chairperson; Rachel Sundberg, THPO (email).
- Tsnungwe Council—Paul Ammon, Chairperson (email); Robert Benson (email).
- Wiyot Tribe—Ted Hernandez, Chairperson (email).
- Yurok Tribe—Thomas O'Rourke, Chairperson (email); Frankie Myers, THPO (email).

To date, one response has been received from THPO, Janet Eidsness, M.A, RPA of Blue Lake Rancheria on January 11, 2018, in which she references a prior meeting on June 15, 2017. This meeting, held to discuss the portion of the Project that crosses Wiyot ancestral territory south of Little River, included William Rich, M.A., RPA; Penny Eckert, Consultant; Hillary Renick, Project Manager for the BIA; Ms. Eidsness; Erika Cooper, THPO for the Bear River Band of the Rohnerville Rancheria; and Wiyot THPO Tom Torma. Information regarding a Wiyot tribal member living in Redding with information about Dows Prairie near the McKinleyville portion of the Project was shared. Contact was not made with this individual, as the Project APE changed and no longer crosses Dows Prairie.

On April 21, 2021, the Wiyot Tribe, Blue Lake Rancheria and Bear River Band of the Rohnerville Rancheria were sent an updated letter and maps showing the selected alternative, Segment 5, that crosses Little River and extends southerly along Railroad Avenue to Murray Road. The Blue Lake Rancheria THPO responded on April 22, 2021 indicating that the tribes had no knowledge of cultural resources in this segment; however, Ms. Eidsness believe it may be “highly sensitive” and asked for clarification on ground disturbance, if any, along this route. William Rich responded on that the majority of Segment 5 calls for overhead and aerial installation on existing utility poles, with the exception of Railroad Avenue and sections of Murray Road in the community of McKinleyville. Ms. Eidsness responded, acknowledging the information and recommended that an Inadvertent Discovery Protocol be added as a condition of Project approval. Wiyot Chairman responded on April 22, 2021 concurred with THPO Eidsness.

Yurok Tribe

Over the course of the Project, Yurok Tribal Representatives including Yurok Vice Chairman Frankie Joe Myers, (acting THPO during the start of the Project), current THPO Rosie Clayburn and Tribal Consultant Robert McConnell were contacted at various times to coordinate information sharing, and field survey participation.

Karuk Tribe

Karuk THPO, Alex Watts-Tobin and then Yurok THPO, Robert McConnell, were present at an initial meeting on July 15, 2015, and followed up with Yurok staff and the Humboldt County District 5 Supervisor Ryan Sundberg on August 26, 2015, and they conferred about recommendations for the Project on that occasion and subsequently.

The relationship of the wider Project vicinity to the APE was discussed in conversations with Bill Tripp and Leaf Hillman, members of the Karuk Tribe and cultural practitioners, on December 9,

2015; and with the Karuk Resources Advisory Board on February 2, 2016. These discussions ranged from artifacts to trails, villages, and viewshed values.

Karuk THPO, following the directive of the Karuk Resources Advisory Board, recommended in principle in 2015 and affirmed on May 19, 2021, the aerial portion of the Project does not need intensive survey, because there would only be potential ground disturbance around the pole sites. In the trenching portion of the Project, intensive survey was recommended by the Karuk Resources Advisory Board. The trenching is restricted to areas either within the roadway of Highway 96, or immediately adjacent to it in the routinely maintained uphill ditch.

Existing Environment

Background Research Methods

The cultural resources research and field studies were divided into those conducted by the Karuk Tribe in Karuk ancestral territory, those authorized by the Yurok Tribe in Yurok ancestral territory, and those within Wiyot ancestral territory. The area included in the Karuk ancestral territory study includes all of Segment 1, from Orleans to Milepost (MP) 26.5 on SR 96, about 12.5 miles southwest of Orleans. The area included in the Yurok ancestral territory study includes a portion of Segment 1, starting at MP 29.9 on SR 96, about 8 miles downriver of Orleans, and all of Segments 2, 3, 4, and 5 as far as Little River. From Little River south to the AT&T central office in McKinleyville, the Project would cross Wiyot ancestral territory.

For the Karuk ancestral territory, background research undertaken by the Karuk THPO encompassed approximately 0.5 mile on either side of the proposed centerline for Segment 1, on either side of SR 96 between Orleans and Big Rock at MP 26.5. The Karuk THPO conducted background research using tribal sources and documents on file at the Northwest Information Center (NWIC) of the California Historical Resources Information System (CHRIS) at Sonoma State University in Rohnert Park, California; the USFS; and the Humboldt County Historical Society. The NWIC records search was completed on December 10, 2015, December 14, 2016, and February 23, 2017.

The Yurok ancestral territory records search was initially conducted at the NWIC on May 5 and October 20, 2017. Two records searches were conducted for additional information for the Segment 2 and 5 portions of the APE on December 18, 2019, and January 21, 2020. The Yurok ancestral territory records search area passes through private land as well as public land managed by the National Park Service (NPS), USFS, U.S. Bureau of Land Management (BLM), and California Department of Parks and Recreation (State Parks). To conduct a comprehensive record search, all information on file regarding precontact and historic-era resources, as they pass through various public lands, was requested from the above-listed agencies. In addition, the Yurok Tribe maintains a comprehensive and confidential database of cultural resource information.

Survey Methods

In Yurok Ancestral Territory, survey was conducted by Tribal Consultant Robert McConnell and/or William Rich on August 19, 20, 26, 27, September 9, 10, 15, 16, 17, 22, 23, 29 and December 9, 10, 2020.

In Karuk Ancestral Territory, survey was conducted by the Karuk THPO and staff on between 2015 and 2021 (December 20 and 22, 2015; February 29, April 3, April 7, and April 18, 2016; December 20, 2019; February 10, 2020; January 18, 2021; January 22, 2021; and May 20, 2021) with Alex Watts-Tobin, Karuk THPO-Archaeologist, and Karuk Archaeological-Cultural Resources Technicians Analisa Tripp and Vikki Preston.

Findings

Segment 1 – North

Background research for the northern portion of Segment 1 (within Karuk ancestral territory) identified two significant cultural village sites, *Panamnik* and *Tishániik*, in the northern portion of the Segment 1 APE. In addition, two other cultural resources have been previously recorded within or in the vicinity of the northern portion of the Segment 1 APE, including the ceremonial World Rock (P-12-002448) and the ceremonial site *Cheenitch* (CA-HUM-360).

- *Panamnik* (recorded as CA-HUM-224 and CA-HUM-359H) is a major village and the location where the *Panamnik* World Renewal Ceremony¹ takes place. The location is in continued use by tribal members and is a place of high cultural and religious significance. Both artifacts and features are present on the landscape that are of great significance to the Karuk Tribe, including associated ceremonial grounds and a cemetery. *Panamnik* was recommended eligible for listing in the National Register in April 1978; however, it has not been formally listed. For the purposes of the Project, *Panamnik* is considered National Register-eligible and, therefore, is considered a historic property for the purposes of the National Historic Preservation Act (NHPA).
- *Tishániik* (recorded as P-12-003709) is also a major village site and has dance grounds where several religious and cultural ceremonies take place. Numerous sacred elements and artifacts are associated with the site, including a ceremonial trail that crosses SR 96 (designated P-12-002338). The trail has been previously disturbed by road construction, mining, erosion, flooding, and flora and fauna; however, it is still known and used by some tribal people. *Tishániik* has been recommended National Register-eligible under Criterion A at the local level of significance for its association with events that have made a significant contribution to the broad patterns of northern California Native American history. For the purposes of the Project, *Tishániik* is considered a historic property for NHPA purposes.

No new historic-era or precontact archaeological sites or cultural resources were found in the northern portion of Segment 1 during the survey effort for this Project. Areas of culturally-significant plants or gathering locations were identified during the survey, but would be avoided by the Project. Field survey confirmed that no Project activities would occur in the vicinity of *Panamnik* (recorded as CA-HUM-224 and CA-HUM-359H). The aerial portion crosses the ceremonial trail at *Tishániik* (P-12-002338), the ceremonial World Rock (P-12-002448), and the ceremonial site *Cheenitch* (CA-HUM-360).

¹ An annual ceremony, called *ira'hip*, or *pikia'vish*, “to make again” (both names were used), that is performed annually for the purpose of ensuring plenty of food and freedom from sickness for the ensuing year (Drucker, 1936 as cited in Karuk, 2020).

Segment 1 - South

Background research did not identify any previously recorded cultural resources within or in the vicinity of the southern portion of the Segment 1 APE (within Yurok ancestral territory).

No cultural resources were identified in the southern portion of Segment 1 (within Yurok ancestral territory) during the survey effort for this Project. No new cultural resources were identified and there are no findings for this segment.

Segment 2

Background research identified four previously recorded cultural resources in the Segment 2 APE including two village sites [*Qo'o'tep* (P-12-001042) and *Pecwan* (P-12-001043)] as well as two trails/roads (P-12-001523 and P-12-002444). No new cultural resources were identified during the survey effort for this Project.

- *Qo'o'tep* (recorded as P-12-001042) is one of several villages, including *Wo'xtek* and *Woxhker*, clustered in this region downriver of *Pe'kwan*. Waterman (1920) describes the site as a contemporary Yurok town of about twenty-two houses and four sweathouses, which Waterman noted in 1909. At the time of his visit, Waterman indicated that “a few Yurok structures stand among a large number of European buildings in various styles”. The site is scantily recorded utilizing historical information from Waterman with no current updates. At the request of the Yurok Tribe the site was not surveyed, nor were updated records prepared during the current survey, which was limited to observations from the roadways. The site remains unevaluated, but is assumed eligible to the National Register for the purposes of this Project and is considered a historic property.
- *Pe'kwan* (recorded as P-12-001043) is considered an important Yurok town with about twenty-four houses. The record for this site was created by the NWIC in 2012 based on Waterman's (1920) publication and the site's current condition has not been disclosed in updated records. At the time of Waterman's recording, the houses were “disposed in two rows, along a trail, which was parallel to the river. It had at least two trails that went through or near the town, and according to Waterman probably characterized the village life prior to European contact. *Pe'kwan* was connected with one of the two deerskin dances. Four of Waterman's informants named various places around the town that were connected to the ceremony. The site remains unevaluated, but is assumed eligible to the National Register for the purposes of this Project and is therefore considered a historic property.
- P-12-001523 is a trail described as a well-defined bench approximately 2 to 3 feet wide and 3,400 feet long. No artifacts were found on or near the alignment. The trail is located under a dense canopy of Douglas-fir and hardwoods and runs side slope on a gentle gradient. At some point in the past, approximately ¼ of the trail, on the most northern end, was developed into a truck road or skid road. According to Tribal Consultant Mr. McConnell the trail was utilized both during precontact and historic-era. The trail was evaluated as an important traditional foot path connecting villages and other areas in this region before the automobile and roads were introduced and has been recommended eligible for the National Register under Criterion A, as well as possibly Criterion B and C. The trail is considered a historic property for the purposes of this Project.
- P-12-002444 is a modern dirt road used by the Yurok Tribe as a walking route during the White Deerskin and Jump Dance world-renewal ceremonies that crosses the APE near Weitchpec Creek. In 2006, archaeologists recommended that the use of the road as a travel

corridor plays an important part in maintaining cultural values of the Yurok Tribe. Therefore, the road appears to qualify for the National Register under Criteria A for its significant cultural and religious importance. For the purposes of the Project, the road is considered National Register-eligible and, therefore, is considered a historic property.

Segment 3

Background research identified two National Register-listed districts (the Bald Hills Archaeological District and the Lyons Ranches Historic District) and a National Register-eligible ethnographic landscape (Bald Hills Ethnographic Landscape) in the Segment 3 APE.

Segment 3 is in the Bald Hills Archaeological District. The District was listed in the National Register in 1982 (No. 82001723) and is a historic property for the purposes of the NHPA. The District incorporates a number of precontact site types, including villages, seasonal camps, trail use routes, artifact concentrations, flake scatters, and a ceremonial place; all of these are located in the Bald Hills portion of RNP. Segment 3 is within or immediately adjacent to five resources (CA-HUM-443, CA-HUM-446/H, CA-HUM-448, CA-HUM-452, and CA-HUM-625) listed as contributing to the District.

- CA-HUM-443 is a lithic scatter of chert flakes with no evident midden, in an area of previous ranching and logging activity. The current survey effort was limited in this area to the right of way on the east side of the road, and to the top of bank on the west side. Flakes were observed in the upper road cuts and in exposed soils on the adjacent landform. Soils appear thin with decomposing bedrock appearing within 50 cm of surface. This reach along Bald Hills Road appears to be cut below the historical ground surface and trenching of the inboard ditch, and trenching of the road-bed or boring would immediately enter deeper strata and the Franciscan formation bedrock. Trenching within the roadbed would be conducted at locations where the roadside ditch is either filled with vegetation or exhibits shallow topography and surface bedrock exposure is not visible.
- CA-HUM-446/H is a lithic scatter and scatter of historic-era artifacts associated with the Tomlinson Stage Stop. In 2001, archaeologists revisited the site and noted that the majority of the site lies west of Bald Hills Road, although cultural materials are exposed on both sides of the road and almost certainly extends onto private property to the east. Limited auger testing also suggested that the deposit reaches up to 50 cm deep at this location. No artifacts were observed during the current survey effort. As proposed, trenching of the inboard ditch, or trenching of the road-bed would immediately enter deeper strata and the Franciscan formation bedrock.
- CA-HUM-448 is an extensive lithic scatter of chert and obsidian flakes, tool fragments and fully-formed tools that surrounds the ethnographic village of *Kinkyolai* (CA-HUM-447), which has midden, housepits, and extensive lithic scatter. The boundary of the site extends east to include the intersection with Bald Hills Road. No artifacts were observed during the current survey effort. The Project proposes to utilize the ditch along the eastern edge of Bald Hills Road. The eastern edge of Bald Hills Road is deeply cut below the ridgeline and a trench excavated within this ditch would enter deeper strata and the Franciscan formation bedrock.
- CA-HUM-452 is a lithic scatter consisting of a concentration of chert flakes, cores, and groundstone. The site is mapped as crossing Bald Hills Road, but it is unclear what constituents lie on the west side of the road. During the current survey effort, flakes were

observed on the land just east of the road and it appears that the main concentration is further to the east as depicted on various site sketch maps. Field survey revealed that a range of conditions exist, from the in-board ditch clearly being in bedrock, to areas on the north end of the site near Williams Ridge Road that are relatively flat in topography with no inboard ditch present.

- CA-HUM-625 was originally recorded as a dense lithic scatter consisting of predominantly chert flakes, with some obsidian material. A later recordation expanded the site boundary and also observed a stemmed point, keeled uniface, obsidian (typically from middle and late periods), all of which indicate that this is a site of long-term use. Site constituents may be deeply buried, although no testing has occurred. During the current field survey, flake stone debitage was observed in exposed soil adjacent to the edge of the road. Bald Hills Road is generally downcut through the site, with the inboard ditch on the eastern edge of the road reaching into Franciscan bedrock parent material. Colluvium from the adjacent road and roadcut has accumulated within the ditch.

The Lyons Ranches Historic District is a National Register-eligible District in the Segment 3 APE. The 5,660-acre District is eligible under Criterion A as a historic vernacular landscape. The District is significant at the local level, for its association with the history and development of the Bald Hills as a sheep ranching community and for its association with the establishment and development of social and economic relationships between Native American people and the immigrant Euroamerican society in the Bald Hills. NPS also concluded that the District was National Register-eligible under Criterion C at the local level, as an example of a large-scale sheep ranch from the late 19th to mid-20th centuries. The District's period of significance under both Criterion A and Criterion C is 1868 to 1959. The California State Historic Preservation Officer (SHPO) concurred with the eligibility findings in January 2017, and in April 2018 the district was officially listed in the National Register. The Lyons Ranches Historic District and its contributing elements are historic properties for NHPA purposes. In addition, the district is listed in the California Register and is also a historical resource for purposes of CEQA.

The rural setting and feel of the District is a priority for RNP and therefore this Project has been designed without the use of markers (i.e. paddles or signs) delineating the buried fiber utility. Connection boxes are designed to be flush or slightly buried beneath surface and not visible by park users experiencing this rural landscape. Tracer wire will be buried with the fiber conduit for later relocation. No specific elements of the District are within the road ditch. The sites discussed below (CA-HUM-446/H, REDW-2005-06, and P-12-002329) are contributing elements to the District and are within the Segment 3 APE.

- CA-HUM-446/H is a lithic scatter and scatter of historic-era artifacts (CA-HUM-446/H) associated with the Tomlinson Stage Stop. This site was discussed above under the Bald Hills Archaeological District.
- REDW-2005-06 is Lyons Road, a dirt road connecting Bald Hills Road to the Lyons Ranch Home that has been preserved and is a main attraction for hikers in the Bald Hills. Today, the beginning of this road, in proximity to the Project, has been widened, and improved with imported gravels and leads to a developed parking area. No resemblance of the historical integrity of the road remains, other than its location which is confined by a narrow ridgeline. Inboard trenching will occur on the opposite or east side of Bald Hills Road.

- P-12-002329 is Old Bald Hills Road Alignment. The current alignment of Bald Hills Road (BHR) appears to have been constructed in 1952 over the top of the former roadway. In many places, the historical road is preserved along the edge of the current road; however, construction of the new road created a level of disturbance which reaches up to 30 feet latterly within road cuts or fill prisms. Analysis conducted in this investigation for impacts to the sections of the historical road alignment included a review of historical air photos from 1941, 1942, and 1948, as well as, more recent LiDAR terrain modeling. Field survey was completed to confirm these digital based analyses. No intact segments of the historical road, that could be affected by this Project, were identified within 15 feet of the road edge.

The Bald Hills Ethnographic Landscape is in the Segment 3 APE. The Landscape has been recommended potentially eligible for the National Register through a preliminary survey evaluation as well as under Criterion A as a Traditional Cultural Property. The Landscape consists of landscape features that relate to ethnographic and contemporary Yurok religious culture. It was identified by knowledgeable Yurok Elders, including Jimmy Jackson, Ralph Miguelena, Harold Melvin, Beebe White, Harold Blake, Charlie Frye, Walter McCovey, Glenn Roberts and Robert McConnell. The Landscape was visited during the field survey with Yurok Tribal Consultant, Robert McConnell and the specific elements of the Landscape were discussed, as necessary.

The rural setting and feel of the Landscape is also a priority for RNP and therefore this Project has been designed without the use of markers (i.e. paddles or signs) delineating the buried fiber utility. Connection boxes are designed to be flush or slightly buried beneath surface and not visible by park users experiencing this rural landscape. Tracer wire will be buried with the fiber conduit for later relocation.

Several locations in the Landscape are in the vicinity of the Segment 3 APE.

- French Camp Area 18 and 20 is a stop along the Trinidad Trail between Elk Camp and Burnt Ranch. The location contains a perennial spring and historical habitation.
- Tomlinson Area 11,12,14,23 includes rock outcrops associated with women's fertility, a natural pond and a trail from Big Prairie leading to Bald Hills Ranch. These are located outside of the APE.
- Childs Hill Area 16 is a broad flat area of Bald Hills Road, once used as a landing strip for the industrial owners of a nearby logging company and is a location once used for historical July 4th gatherings by the Yurok community.
- Elk Camp & Logging Community Area 9 is an area where timber industry workers and their families were residing close to mills and logging areas. The community once had a store, school and numerous houses. This area is important to Yurok history during the post war timber boom.

Other aspects of the Landscape include trails, home sites, prairies, medicine areas, peaks, and traditional game fields. Cultural values ascribed to these elements, that may include viewshed values, were considered with regard to Project construction, timing and a ceremonial calendar associated with traditional uses of these areas. Tribal Consultant Robert McConnell did not express any concerns.

In addition to the resources that contribute to the above districts, three other cultural resources (P-12-001638, P-12-002326, and P-12-002591) have been previously recorded in the Segment 3 APE.

- P-12-001638 is the Wiregrass Ridge Aboriginal and Historical Trail System. During this resource's most recent recordation, the trail was recommended as a traditional cultural property for the Yurok Tribe as a place rooted in their heritage and important to their ongoing cultural identity. In addition, accounts of skirmishes between the U.S. Army, locally organized Euroamerican forces, and local Indians along the Trinidad Trail provides association of this trail with U.S. military history and Indian resistance. For the purposes of the Project, P-12-001638 is considered National Register-eligible and, therefore, is a historic property for NHPA purposes. The road is incised through this area, well below the u-shaped feature associated with the trail tread. Trenching and or boring will occur within, or into, the bottom of the ditch, at the edge of the road.
- P-12-002326 is the Dean Lansing Logging Camp and contains a series of features comprising a large historic-era camp related to the old airstrip that was once located on Counts Hill Prairie. Features consist of wooden remnants of collapsed structures and associated debris. Artifacts on site appear to date to circa 1950, although a few aqua glass fragments may reflect earlier homesteading. In 2005, the camp was recommended potentially eligible for the National Register for its associations with historical logging and use of the Bald Hills airstrip. Native American artifacts and other historic-era artifacts have been documented at this location. For the purposes of the Project, P-12-002326 is considered National Register-eligible and, therefore, is a historic property for NHPA purposes. Trenching at this location would be completed the east side of the road.
- P-12-002591 is the Wiregrass Prairie Bear Grass Gathering Area, a traditional place where the Yurok have continuously gathered bear-grass for basket making. The prairie supports the rich bear-grass resource and maintains sufficient integrity of location, design, feeling, and association to qualify as a traditional cultural property important to continuing Indian basket weaving traditions and cultural identities. For the purposes of the Project, resource P-12-002591 is considered National Register-eligible and, therefore, a historic property for NHPA purposes. A healthy population of Bear Grass was observed during the survey effort. Trenching at this location will occur of the bottom of the inboard ditch.

Segment 4

Background research indicates that the Segment 4 APE is also within the National Register-listed districts (the Lyons Ranches Historic District and the Bald Hills Archaeological District) and the National Register-eligible ethnographic landscape (Bald Hills Ethnographic Landscape) discussed above. No resources contributing to the Bald Hills Archaeological District have been documented in the Segment 4 APE.

One resource contributing to the Lyons Ranches Historic District has been previously recorded in the Segment 4 APE.

- P-12-002329 is the Old Bald Hills Road Alignment, a contributor to the Lyons Ranches Historic District. This segment appears to range from 25-90 feet, and below the ridge, from the APE. The road is constructed on a cut and fill grade. Trenching will occur along the eastern edge of modern Bald Hills Road.

Two resources contributing to the Bald Hills Ethnographic Landscape have been previously recorded in the Segment 4 APE.

- Gans Area 15 and a location of Iris and Daffodils is a location associated with Yurok ceremonial and traditional gathering. Trenching will occur on the eastern side of the inboard ditch along Bald Hills Road.
- REDW-2009-01 is a lithic scatter located to the west of Bald Hills Road in Gans Prairie. The site is west of the road and outside the APE; however, because RNP is concerned with yet unidentified archaeological deposit, the trench will be placed within the road bed and the staging area has been relocated.
- REDW-2002-05 (P-12-001877) is a concentration of historic-era artifacts from residential use of the area during the 1940s and is approximately 40 feet to the southwest, with the closest loci at approximately 100 feet from the southwestern edge of the road.
- Elk Camp and Logging Community Area 9 was described in Segment 3 above.

In addition, eight other resources (CA-HUM-668, CA-HUM-669, CA-HUM-1349, the Gans Prairie Trail, CRF-BHR-09, Old Redwood Highway, P-12-000255, and Silver Lining Dump) have been previously recorded in or adjacent to the Segment 4 APE.

- CA-HUM-668 is a scatter of flake stone debitage and ground stone artifacts. This site has not been formally evaluated and is assumed eligible to the National Register and may contribute to the nearby Bald Hills Archaeological District. No cultural materials were observed during the current field survey at this location; however, the area has considerable dense young vegetation and leaf litter covering the ground surface. The Bald Hills Road is cut below the site, with a steep cutbank and an inboard ditch revealing bedrock material.
- CA-HUM-669 includes chert flakes, cores and possible cobble hammers and indications that there may be a subsurface component because artifacts were described as being found in a disturbed context near push piles. This site has not been formally evaluated and is assumed eligible to the National Register and may contribute to the nearby Bald Hills Archaeological District. The site is in a dense redwood forest at the intersection of Bald Hills Road and a skid road. No cultural materials were observed during the current field survey at this location.
- CA-HUM-1349 is the historic-era Trinidad Trail that once extended from Trinidad, north to Big Lagoon and then east to cross Redwood Creek, terminating at Bald Hills Road near Elk Camp. Intact segments of the trail have been identified on the lower slopes just east of Redwood Creek. There is no evidence of the trail where it is mapped crossing Bald Hills ridge. In this area, the modern road alignments have destroyed the historical trail.
- Gans Prairie Trail was not observed in the vicinity of the APE. Mapped segments are to the west and downslope of Bald Hills Road, outside of the survey area.
- Old Redwood Highway within the APE is aligned with the historical route of U.S. 101. This continues to be the route of U.S. 101 and no vestiges of its historical alignment were observed. The aerial alignment that passes along U.S. 101 and through the historical town site of Orick.
- P-12-000255 is mapped approximately one-mile north of Orick at the confluence of Prairie Creek and Redwood Creek. This resource was originally recorded by Waterman (1920) as

Oraw, a campsite consisting of a cluster of huts used during acorn harvesting. In 1971 it was noted that the site had been destroyed by the construction of U.S. 101 and by the building of a rip-rap levee along the bank of Redwood Creek. The current field survey effort did not identify cultural material at this location.

- Silver Lining Dump (CRF-BHR-09) is a historic-era residential roadside dump. The site is not a contributor to the Lyons Ranches Historic District, and remains unevaluated at this time. There are no associated features or artifacts with this site in the inboard ditch on the northern road edge.

Segment 5

Background research identified four previously recorded cultural resources (P-12-001627, P-12-003601, Trinidad-Klamath Trail, and Old Redwood Highway) in the Segment 5 APE.

- P-12-001627 is the H-Line Railroad Grade. The rails, ties, and trestles were removed after the timber was logged. This grade was later reconstructed into a rocked truck road, with the actual railroad grade used for the road prism. This railroad alignment was documented during investigations for timber harvest operations and has not been evaluated for National Register eligibility.
- P-12-003601 is the Crannell Mainline Railroad, which intersects and traverses the Segment 5 APE, between Water Gulch and a point located 2.7 miles south on Old Railroad Grade Road, approximately 1 mile east of the town of Crannell. This railroad was in operation from about 1915 to 1940. Logs were hauled by rail to the sawmill at Crannell, as well as lumber leaving the sawmill and going to Humboldt Bay to be loaded on ships. When trucking became the primary mode of transporting logs, the rails, ties and trestles were removed and salvaged. Many of the remaining grades were converted to truck roads or abandoned. This railroad alignment was documented during investigations for timber harvest operations, and has not been evaluated for the National Register.
- The Trinidad-Klamath Trail (also called the Yurok Coastal Trail) is a trail alignment that crosses the Segment 5 APE in four locations, just south of Big Lagoon. The RNP Cultural Resources staff, mapped this trail using historical maps and air photos. The entire mapped trail segment travels from just south of Big Lagoon, north along the east side of Big Lagoon. The trail then travels west to the shoreline, between Big Lagoon and Stone Lagoon and continues north to Orick.
- Cultural Resource staff at RNP have mapped a segment of the Old Redwood Highway, that stretches 2.6 miles between the town of Orick and Davison Road. One segment intersects the APE, on the north side of Highway 101, approximately 0.6 miles west of Orick. Other segments of the Old Redwood Highway have been recorded and were discussed in the section for Segment 4.

Bridges

Seven bridges in the APE are listed in the California Department of Transportation (Caltrans) Historic Bridge Inventory (Caltrans, 2012) (**Table 4.5-1**). All of the bridges have been designated as Category 5, indicating that they are not eligible for listing in the National Register.

**TABLE 4.5-1
 BRIDGES IN THE PROJECT AREA**

Segment	Bridge No.	Location	Construction Date	Category
1	04 0059	State Route 96 at Aikens Creek	1960	5
1	04 0063	State Route 96 at Bluff Creek	1960	5
1	04 0225	State Route 96 at Bluff Creek	1967	5
1	04 0061	State Route 96 at Slate Creek	1960	5
2	04C0005	Bald Hills Road at Prairie Creek	1957	5
2	04C0007	Bald Hills Road and State Route 169 at Klamath River	1959 / 1965	5
4	04 0028	U.S. 101 at Redwood Creek	1988	5

SOURCE: Caltrans, 2012

Signal Connections

No cultural resources were identified in the direct APE of the signal connections on Antenna Ridge or Orleans Mountain. Several cultural resources have been previously recorded within 3 miles of the Antenna Ridge APE, including one historic-era resource (Orleans Mountain Lookout), one historic-era trail, and five sites with precontact components. Ethnographic research indicated an ancestral route to Antenna Ridge, and on up to Orleans Mountain. This trail, or a modern version of it, is readily apparent in the vicinity. The uphill trail joins the ridge trail a little downslope from the masts, but continues past them and uphill until the last major rise up to the summit of the mountain.

4.5.2 Regulatory Framework

For a discussion of federal, state, and local regulations that are relevant to the Project see Appendix F.

4.5.3 Applicant Proposed Measures

The following Applicant Proposed Measures (APMs) related to cultural resources have been included as part of the Project:

- **APM CR-1:** An archaeologist meeting the Secretary of the Interior’s Professional Qualifications Standards for Archeology with expertise in California archaeology (qualified archaeologist) will perform or direct all cultural resources work with trained assistants.
- **APM CR-2:** Prior to any ground-disturbing activities, a qualified archaeologist, in consultation with the Yurok Tribe, Karuk Tribe, Wiyot Tribe, and the Applicant, will develop a **Cultural Resources Management Plan (CRMP)**. The CRMP will include provisions for establishing Archaeologically Sensitive Areas (ASAs), specific locations where directional drilling is required in the vicinity of known archaeological sites, and an Archaeological Monitoring Plan (AMP) that provides monitoring protocols for the Project. The CRMP will also establish management guidelines for protecting archaeological sites from future impacts. The CRMP will include the following specific components:
 1. Maps of known archaeological sites with a reference system so that clear boundaries are established in relation to the Project.

2. Maps with a buffer area of 100 feet around the boundaries of known sites establishing ASAs.
 3. Provisions for fencing or other protective measures of ASAs.
 4. Provisions for the removal of identifying markers for ASAs after construction in the area is complete.
 5. Maps of specific locations where directional drilling will be required in the vicinity of known archaeological sites and provision for installation methods, including appropriate depth of directional drilling.
 6. The outline of a worker cultural resources awareness training program that will be provided for all personnel involved in ground-disturbing activities. The program will detail the recognition and importance of archaeological resources, and procedures to follow should archaeological resources be encountered during construction.
 7. An AMP that includes provisions for monitoring during ground-disturbing activities, including the locations and duration of monitoring, the anticipated roles of monitors, and the reporting requirements.
 8. An Inadvertent Discovery Plan that includes actions to follow should an archaeological resource be encountered, including stopping work within 100 feet of the find, notifying the appropriate land management agency, and continuing the stop-work order until it can be evaluated by a qualified archaeologist and a Native American representative. The Inadvertent Discovery Plan will also include a research design and treatment plan to be instituted if a resource cannot be avoided. The research design and treatment plan will be completed in consultation with Native American representatives.
 9. Provisions that the California Public Utilities Commission (CPUC) and BIA, together with the appropriate land managing agency if on federal land, will determine whether avoidance is feasible in light of factors such as the nature of the inadvertent discovery, Project design, costs, and other considerations. If avoidance is not feasible, other appropriate measures (e.g., data recovery as agreed upon between CPUC, BIA, the appropriate land managing agency if on federal land, the archaeological consultant, and Native American representatives) will be instituted.
- **APM CR-3:** If human remains are discovered, construction will be halted, and the coroner will be notified. If it is determined that the remains meet NAGPRA criteria, measures specified in NAGPRA regulations will be followed on federal lands.
 - **APM CR-4:** The Karuk Tribe will supply Native American Monitors in the Karuk Ancestral Territory the Yurok Tribe will supply Native American Monitors in the Yurok Ancestral Territory, and the Wiyot Tribe will supply Native American Monitors in the Wiyot Ancestral Territory. Where ancestral territories are mapped as overlapping, monitors from both tribes will work in tandem.
 - **APM CR-5:** Where depth of archaeological resources in highly sensitive areas can be known or assumed, directional drilling may be required by land managing agencies to avoid cultural resources. Directional drilling depths should be at least two feet below known maximum depth of cultural resources. If fractured bedrock must be drilled, preventing the inadvertent release of drilling fluids (inert clays and water) cannot be guaranteed.

4.5.4 Environmental Impacts and Mitigation Measures

Significance Criteria

Significance Criteria under CEQA

Significance criteria under CEQA are presented at the beginning of this section.

Significance Criteria under the National Historic Preservation Act

Section 106 of the NHPA requires that a federal agency with direct or indirect jurisdiction over a proposed federal or federally assisted undertaking, or issuing licenses or permits, must consider the effect of the proposed undertaking on historic properties. A historic property may include a precontact or historic district, site, building, structure, or object included in, or eligible for inclusion in the National Register. If an undertaking may have an adverse effect, the first step is to identify the APE and significant cultural resources.

A significant impact would occur if a proposed action results in an adverse effect on a property that is listed in or eligible for inclusion in the National Register. The specific Criteria of Effect and Adverse Effect, as defined in 36 CFR 800.9, used to evaluate an undertaking's effect on a historic property, are as follows:

1. An undertaking has an effect on a historic property when it may alter the characteristics of the property that qualify the property for inclusion in the National Register. For the purpose of determining effect, alteration to features of the property's location, setting, or use may be relevant depending on a property's significant characteristics and should be considered.
2. An undertaking is considered to have an adverse effect when the effect on a historic property may diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association. Adverse effects on historic properties include, but are not limited to:
 - a. Physical destruction, damage, or alteration of all or part of the property;
 - b. Isolation of the property from or alteration of the character of the property's setting when that character contributes to the property's qualification for the National Register;
 - c. Introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting;
 - d. Neglect of a property resulting in its deterioration or destruction; and
 - e. Transfer, lease, or sale of the property.

Approach to Analysis

Architectural Resources

Potential impacts on architectural resources are assessed by identifying any activities (either during construction or operations) that could affect resources identified as historical resources, for CEQA purposes, or as historic properties, for NHPA and NEPA purposes. Once a resource has been identified as a historical resource or historic property, it then must be determined whether

the impacts of the Project would cause a substantial adverse change in the significance or an adverse effect.

A substantial adverse change in the significance of a historical resource means “physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the historic resource would be materially impaired” (14 CCR Section 15064[b][1]). A historical resource is materially impaired through the demolition or alteration of the resource’s physical characteristics that convey its historical significance and that justify its inclusion in the California Register (14 CCR Section 15064.5[b][2][A]). An adverse effect on a historic property may require a historic properties treatment plan and a memorandum of agreement with the SHPO and/or a THPO.

Archaeological Resources

The significance of most precontact and historic-era archaeological sites is usually assessed under California Register Criterion 4 and National Register Criterion D. These criteria stress the importance of the information potential contained within the site, rather than its significance as a surviving example of a type or its association with an important person or event. Archaeological resources also may be evaluated under California Register and National Register Criteria 1/B, 2/C, and/or 3/C. Under CEQA, archaeological resources also may be assessed as unique archaeological resources, defined as archaeological artifacts, objects, or sites that contain information needed to answer important scientific research questions (PRC Section 21083.2[g]).

Under CEQA, impacts on unique archaeological resources or archaeological resources that qualify as historical resources are assessed pursuant to PRC Section 21083.2, which states that the lead agency shall determine whether the Project may have a significant effect on archaeological resources. As with architectural resources, whether the impacts of the Project would “cause a substantial adverse change in the significance” of the resource must be determined (14 CCR Section 15064.5[b]).

Similar to the analysis of impacts on architectural resources, potential impacts on archaeological resources are assessed by identifying any activities (during either construction or operations) that could affect archaeological resources identified as historical resources or unique archaeological resources, for CEQA purposes, or historic properties, for NHPA and NEPA purposes. Once an archaeological resource has been identified as a historical resource, unique archaeological resource, and/or historic property, it then must be determined whether the impacts of the Project would cause a substantial adverse change in the significance or an adverse effect.

Human Remains

Human remains, including those buried outside of formal cemeteries, are protected under several state laws, including PRC Section 5097.98 and HSC Section 7050.5. This analysis considers impacts on human remains including intentional disturbance, mutilation, or removal of interred human remains.

The Native American Graves Protection and Repatriation Act (NAGPRA) outlines requirements for the disposition of cultural items, including human remains, by a Federally funded repository.

Additionally, NAGPRA governs the inadvertent discovery of cultural items on Federal or Tribal lands. It provides for the inventory, protection and return of cultural items to affiliated Tribes. NAGPRA requires permits, as well as consultation with Tribes, for intentional excavation and removal of cultural items from Federal or Tribal lands. Its regulations include provisions that, upon inadvertent discovery, the federal agency will cease all activity in the area of discovery, protect the discovered items, and immediately notify the affected Tribe. Disposition of the items, which will include consultation, must then be carried out in accordance with NAGPRA procedures.

Tribal Cultural Resources

Impacts on tribal cultural resources are assessed in consultation with the affiliated California Native American Tribe in accordance with PRC Section 21080.3. This analysis considers whether the Project would cause damaging effects to any tribal cultural resource, including archaeological resources and human remains that may qualify as tribal cultural resources.

Impact Discussion

Most impacts on cultural resources occur during the construction of a project and very little potential exists for operations to affect such resources; therefore, this analysis combines the consideration of construction and operational impacts.

a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5. *No Impact; None.*

Based on the results of the background research, survey, and analysis provided above, there are no architectural resources in the Project area that are eligible for listing or listed in the California Register or National Register.

The Lyons Ranches Historic District and the contributing Bald Hills Road Alignment are in the Project area and the Direct APE (see **Table 4.5-2** below). Implementation of the Project would not have an adverse impact on the District; following Project implementation, in accordance with APM TRANS-3, repairs to the road surface would return Bald Hills Road to pre-Project conditions.

No impact on architectural or structures resources qualifying as historical resources or historic properties would occur.

Mitigation: None required.

b, c, d) Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to §15064.5; disturbance of human remains; or an adverse change in the significance of a tribal cultural resource defined in PRC §21074. *Less than Significant with Mitigation; Localized; Moderate.*

This impact discussion focuses on archaeological resources, human remains, and tribal cultural resources that are considered historical resources or unique archaeological resources, for CEQA purposes, or as historic properties, for NHPA purposes.

There are numerous recorded cultural resources in or adjacent to the Project area. These resources include Native American resources (village sites, lithic scatters, trails/roads, gathering areas, ethnographic landscapes) and historic-era archaeological resources (refuse deposits, road alignments, railroads). Some of these resources contribute to National Register-eligible districts. **Table 4.5-2** lists these cultural resources, their locations relative to the Project area, their California Register and National Register eligibility, and the recommended finding of effect with conditions.

**TABLE 4.5-2
CULTURAL RESOURCES IN THE PROJECT AREA**

Designation	Description	Significance	Current Finding	Conditions
Segment 1 - North				
CA-HUM-224; CA-HUM-359H	<i>Panamnik</i> village site	Nominated for the National Register	No Adverse Effect with Mitigation	SHPO concurrence on FNAE with CUL-1 and CUL-2
P-12-003709; P-12-002338	<i>Tishániik</i> village site and ceremonial trail	Recommended eligible for the National Register	No Adverse Effect with Mitigation	SHPO concurrence on FNAE with CUL-1 and CUL-2
CA-HUM-360	<i>Cheenitch</i> ceremonial site	Unevaluated	No Adverse Effect with Mitigation	SHPO concurrence on FNAE with CUL-1 and CUL-2
Segment 1 - South				
No Resources in Segment 1 South APE				
Segment 2				
P-12-001042	<i>Qo'otep</i> village site	Unevaluated	No Adverse Effect	None
P-12-001043	<i>Pe'kwan</i> village site	Unevaluated	No Adverse Effect	None
P-12-001523	Trail	Unevaluated	No Adverse Effect	None
P-12-002444	Road used for world-renewal ceremonies	Recommended eligible for the National Register	No Adverse Effect	None
Segment 3				
Bald Hills Archaeological District*		Listed in the National Register	No Adverse Effect with Mitigation	SHPO concurrence on FNAE with CUL-3
CA-HUM-443	Lithic scatter/village site	Contributing resource to the BHAD	No Adverse Effect with Mitigation	<i>Bald Hills Road MP 10.10–13.46 and 13.46–16.05</i> ; SHPO concurrence on FNAE with CUL-4
CA-HUM-446/H	Lithic scatter/village site (also in the LRHD)	Contributing resource to the BHAD and LRHD	No Adverse Effect with Mitigation	<i>Bald Hills Road MP 13.46–16.05</i> ; SHPO concurrence on FNAE with CUL-5
CA-HUM-448	Lithic scatter/village site	Contributing resource to the BHAD	No Adverse Effect with Mitigation	SHPO concurrence on FNAE with CUL-6
CA-HUM-452	Lithic scatter/village site	Contributing resource to the BHAD	No Adverse Effect with Mitigation	<i>Bald Hills Road MP 13.46–16.05</i> ; SHPO concurrence on FNAE based with CUL-7
CA-HUM-625	Lithic scatter/village site	Contributing resource to the BHAD	No Adverse Effect with Mitigation	SHPO concurrence on FNAE with CUL-8
Lyons Ranches Historic District*		Listed in the National Register	No Adverse Effect with Mitigation	SHPO concurrence on FNAE with CUL-9

TABLE 4.5-2 (CONTINUED)
CULTURAL RESOURCES IN THE PROJECT AREA

Designation	Description	Significance	Current Finding	Conditions
Segment 3 (cont.)				
CA-HUM-446/H	Lithic scatter/village site (also in the BHAD)	Contributing resource to the BHAD and LRHD	No Adverse Effect with Mitigation	<i>Bald Hills Road MP 13.46–16.05</i> ; SHPO concurrence on FNAE with CUL-5
REDW-2005-06	Lyons Road	Contributing resource to the LRHD	No Adverse Effect	None
P-12-002329	Old Bald Hills Road*	Contributing resource to the LRHD	No Adverse Effect	None
Bald Hills Ethnographic Landscape*	French Camp Area 18 and 20; Tomlinson Area 11, 12, 14, and 23; Childs Hill Area 16, Elk Camp Logging Community Area 9	Recommended eligible to the National Register	No Adverse Effect with Mitigation	SHPO concurrence on FNAE with CUL-3
P-12-001638	Wiregrass Ridge Aboriginal and Historical Trail System	Recommended eligible for the National Register	No Adverse Effect	None
P-12-002326	Dean Landsing Logging Camp	Recommended eligible for the National Register	No Adverse Effect with Mitigation	SHPO concurrence on FNAE with CUL-10
P-12-002591	Wiregrass Prairie Bear Grass Gathering Area	Recommended eligible for the National Register	No Adverse Effect	None
Segment 4				
Bald Hills Archaeological District*		Listed in the National Register	No Adverse Effect with Mitigation	SHPO concurrence on FNAE with CUL-3
Lyons Ranches Historic District*		Listed in the National Register	No Adverse Effect with Mitigation	SHPO concurrence on FNAE with CUL-9
P-12-002329	Old Bald Hills Road*	Contributing resource to the LRHD	No Adverse Effect	None
Bald Hills Ethnographic Landscape*	Gans Area 15; REDW-2009-01; REDW-2002-05; Elk Camp Logging Community Area 9	Recommended eligible for the National Register	No Adverse Effect with Mitigation	SHPO concurrence on FNAE with CUL-13 and CUL-14
CA-HUM-668	Lithic scatter	Not evaluated; assumed eligible	No Adverse Effect with Mitigation	SHPO concurrence on FNAE with CUL-11
CA-HUM-669	Lithic scatter	Not evaluated; assumed eligible	No Adverse Effect with Mitigation	SHPO concurrence on FNAE with CUL-12
CA-HUM-1349	Trinidad Trail*	Recommended eligible for the National Register	No Adverse Effect	None
---	Gans Prairie Trail	Not evaluated; assumed eligible	No Adverse Effect	None
---	Old Redwood Highway*	Not evaluated; assumed eligible	No Adverse Effect	None
P-12-000255	<i>Oraw</i> village site	Not evaluated	No Adverse Effect	None
CRF-BHR-09	Silver Lining Dump	Not evaluated	No Adverse Effect with Mitigation	SHPO concurrence on FNAE with CUL-15

**TABLE 4.5-2 (CONTINUED)
CULTURAL RESOURCES IN THE PROJECT AREA**

Designation	Description	Significance	Current Finding	Conditions
Segment 5				
P-12-000947	Guynup Railroad Spur	Not evaluated	No Adverse Effect	None
P-12-001627	H-Line Railroad Grade	Not evaluated	No Adverse Effect	None
P-12-002313	Mather Tract Railroad Grade	Not evaluated	No Adverse Effect	None
P-12-003601	Crannell Mainline Railroad	Not evaluated	No Adverse Effect	None
–	Trinidad-Klamath Trail	Not evaluated	No Adverse Effect	None
---	Old Redwood Highway*	Not evaluated; assumed eligible	No Adverse Effect	None

NOTES:

BHAD = Bald Hills Archaeological District; LRHD = Lyons Ranches Historic District; FNAE = Finding of No Adverse Effect; National Register = National Register of Historic Places; SHPO = State Historic Preservation Officer

* Resource is in more than one segment

The Applicant has provided several APMs related to cultural resources (Section 4.5.4), including preparing an inadvertent-discovery plan, establishing avoidance areas, requiring worker training, and conducting directional drilling in archaeologically sensitive areas to avoid known resources. The APMs also include directives on Native American monitors and regulations in the event human remains are discovered.

Implementing APMs would ensure that cultural resources in the APE are avoided during construction through directional drilling or other methods, and that delineated locations for archaeological and Native American monitoring are included in an established Archaeologically Sensitive Area (ASA) through an archaeological monitoring plan. The cultural resources management plan would also include an outline for a worker cultural resources awareness training program and a comprehensive inadvertent discovery plan.

Through development of the cultural resources management plan outlined in APM CR-2, cultural resources described in the section and listed in Table 4.5-2 will be avoided. In addition to the APMs, the mitigation measures provided below will augment the cultural resources management plan to ensure that there are no adverse effects to historic properties. Note that this document incorporates agency-recommended avoidance measures, based on the Section 106 consultation process that occurred for the project. The measures are considered recommendations for the purposes of Section 106. For the purposes of CEQA and NEPA, however, these measures are considered mitigation. Implementation of these mitigation measures would reduce potential impacts to cultural resources to less than significant and moderate. Mitigation measures for Segment 1 are differentiated as Segment 1 North (within Karuk ancestral territory) and Segment 1 South (within Yurok ancestral territory).

Mitigation Measure CUL-1: Segment 1 North

The Karuk Resources Advisory Board concurred that ground disturbance in areas of anchor replacement is a minor action, however, within the three identified archaeological

sites, a monitor should be used; outside of identified cultural sites, pre-inspection and post-inspection should be sufficient.

A pole replacement was acknowledged to be a more ground-disturbing activity and a monitor should be present for such an operation within the APE. If a pole needs to be replaced within identified cultural site, then all attempts should be made to re-use the existing hole for placement of a new utility pole. Tribal monitoring should be coordinated through the Karuk THPO.

Mitigation Measure CUL-2: Segment 1 North

Ground disturbing activities should not be done during Karuk ceremonial times. Caltrans issues encroachment permits for work on the highway, and those permits will exclude ceremony dates.

Mitigation Measure CUL-3: Segment 2 South

It is recommended that a tribal monitor be afforded an opportunity to observe all ground disturbing activities within Yurok territory. For the purposes of this Project, this area extends from MP 26.5 in Segment 1 downriver throughout the Klamath River corridor, over Bald Hills Road, south on U.S. 101 and through industrial timberland, to the crossing of Little River. The Project route passes through and near several ethnographic villages, archaeological sites, as well as the Bald Hills Archaeological District, Lyons Ranches Historic District, and the Bald Hills Ethnographic District and the Yurok Tribe requests monitoring regardless of resource location, significance evaluations, or NHPA Section 106 findings. Tribal monitoring should be coordinated through the Yurok THPO.

Redwood National Park also requests that archaeological monitoring occur within all three Districts: Bald Hills Archaeological District, Lyons Ranches Historic District, and the Bald Hills Ethnographic District and that a discovery plan of action be in place, specifically to address trenching beneath paved surfaces, where field survey was unable to be completed, and to address secondary deposits that may be encountered within the inboard ditch.

Mitigation Measure CUL-4: CA-HUM-443

This reach along Bald Hills Road, within the archaeology site appears to be cut below the historical ground surface and trenching of the inboard ditch or within the road bed would immediately enter deeper strata and the Franciscan formation bedrock. Trenching within the roadbed will be conducted at locations where the roadside ditch is either filled with vegetation or exhibits shallow topography and surface bedrock exposure is not visible. These installation methods will ensure adverse impacts to the archaeological site are avoided. The presence of archaeological monitors during trenching into the paved road surface will also allow for a phased approach of identification efforts at these locations.

Mitigation Measure CUL-5: CA-HUM-446/H

The Project shall utilize the inboard ditch or trenching of the road-bed and would immediately enter the Franciscan formation bedrock, thereby avoiding the archaeological site.

Mitigation Measure CUL-6: CA-HUM-448

The Project shall utilize the ditch along the eastern edge of Bald Hills Road, where it is deeply cut below the ridgeline and the archaeological site, thereby avoiding the archaeological site.

Mitigation Measure CUL-7: CA-HUM-452

The Project shall utilize the inboard ditch or trenching of the road bed and would immediately enter the Franciscan formation bedrock, thereby avoiding the archaeological site.

Mitigation Measure CUL-8: CA-HUM-625

The Project shall utilize boring through this area to ensure that installation does not impact surface strata, thereby avoiding the archaeological site.

Mitigation Measure CUL-9: Lyons Ranches Historic District

The Project through the District will avoid the use of buried fiber line placards or other above ground marker. The historical setting and integrity of the District shall be maintained and no above ground visual intrusions should be introduced as a way to mark the route of the underground fiber optic utility. Junction boxes or other infrastructure should also be at or below grade, and not made visible to park users.

Mitigation Measure CUL-10: P-12-002326

Trenching at this location shall only be done on the east side of the road, thereby avoiding the archaeological site.

Mitigation Measure CUL-11: CA-HUM-668 (P-12-000659)

The Project shall utilize trenching beneath the site where bedrock is visible and boring underneath the ditch where depth of bedrock is unclear, thereby avoiding the archaeological site.

Mitigation Measure CUL-12: CA-HUM-669 (P-12-000660)

Due to the lack of visible Franciscan outcrops and heavy vegetation, the Project will utilize directional drilling at a depth of at least 5 feet below the surface within the site boundary.

Mitigation Measure CUL-13: P-12-001877 and REDW-2009-01

The Project shall utilize trenching of the road bed, thereby avoiding the archaeological sites.

Mitigation Measure CUL-14: Staging Area #403

Staging area #403 shall not be developed on undisturbed grassland. Nearby roadside pullouts or other previously disturbed areas would be used as alternatives.

Mitigation Measure CUL-15: CRF-BHR-09

The site shall be flagged to ensure that Project equipment operates only on the immediate edge of the road.

Mitigation Measure CUL-16: Archaeological Field Markers

All archaeological site boundaries shall be marked in the field (i.e. flagging) prior to Project implementation and removed after construction is completed.

With the above mitigation measures, the Project would result in no adverse effects to historic properties pursuant to CFR 36 Part 800.5 (d) (1).

Mitigation: Less than significant and moderate.

4.5.5 NEPA Alternatives

No-Project Alternative

Under the No-Project Alternative, the Project would not be constructed, operated, and maintained, or decommissioned and there would be no ground disturbance associated with the Project that could potentially affect cultural resources. Therefore, under the No-Project Alternative, no impact on cultural resources, including tribal cultural resources, would occur.

4.6 Energy Conservation

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
6. ENERGY CONSERVATION—				
Would the project:				
a) Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

This section identifies and evaluates issues related to energy conservation in the context of the Project. It discusses the physical and regulatory setting; the criteria used for determining the significance of environmental impacts; and potential impacts associated with construction, operation, and maintenance of the Project. The Study Area for analysis of energy use consists of the Pacific Gas and Electric Company (PG&E) service area within 40 miles of the Project segments.

4.6.1 Environmental Setting

California Energy System

Energy resources in California include electricity (generated from both renewable and nonrenewable sources), natural gas, and petroleum. According to the California Energy Commission (CEC), approximately 68 percent of electricity generated from all sources, 10 percent of natural gas, and 31 percent of petroleum consumed or used in the state is generated within California. To meet energy demand, California imports the remainder of its needed energy: electricity from the Pacific Northwest and the Southwest; natural gas from Canada, the Rocky Mountain states, and the Southwest; and petroleum from Alaska and foreign sources (CEC, 2018a, 2018b, 2018c, 2018d; EIA, 2017).

Electricity

The production of electricity requires the consumption or conversion of energy resources including natural gas, coal, water, nuclear, and renewable sources such as wind, solar, and geothermal. Approximately 46.54 percent of the electricity produced in California is generated by natural gas-fired power plants, 0.15 percent comes from coal-fired power plants, 11.34 percent comes from large-hydro dams, 9.38 percent comes from nuclear power plants, and 32.35 percent comes from renewable energy sources such as solar, wind, geothermal, biomass, and small hydro (CEC, 2019a). In California, electricity is distributed using a network of high-voltage transmission lines referred to as the *power grid*.

Transportation Fuel

In California, the most used transportation fuel by volume is gasoline, which is consumed by light-duty cars and trucks. Nearly all of the gasoline used in California is obtained through the

retail market. In 2017, approximately 13.9 billion gallons of gasoline were sold in California's retail market (CEC, 2018b).

Diesel fuel is the second largest transportation fuel by volume used in California, behind gasoline. In 2015, 4.2 billion gallons of diesel were sold in California (CEC, 2018b). According to the U.S. Energy Information Administration, diesel fuel powers most farm and construction equipment in the United States (EIA, 2017). In 2017, retail sales of diesel fuel in California amounted to 1.9 billion gallons (CEC, 2018b).

Local Energy System

Humboldt County is geographically isolated and remote, with only one connection to the larger natural gas grid and four connections to the larger electrical grid. Humboldt County imports the majority of its transportation and heating fuels. Because of the variety of natural resources in Humboldt County, the county has a large potential for renewable energy development in wind, wave, biogas, solar, and run-of-the-river hydro.¹ As a result, in recent years, Humboldt County has prioritized energy conservation, independence, and development of renewable resources within the region (Humboldt County, 2017).

The primary uses of energy in Humboldt County include transportation fuel, electrical and heat energy in homes, businesses, industries, and agriculture. In 2010, approximately half of the energy used in Humboldt County was used as transportation fuel (gasoline and diesel); a large percentage of energy was also used to meet end-use electrical demands and end-use natural gas heating demands (Humboldt County, 2017). Demand for electricity and natural gas is expected to grow approximately 0.5 to 2.5 percent annually over the next 20 years (Humboldt County, 2017).

Electricity

PG&E owns the electrical and natural gas distribution lines in Humboldt County and provides electrical service to the majority of the unincorporated areas in the county. In the town of Scotia, 35 miles south of the Project, electrical service is provided by the Pacific Lumber Company. In the town of Samoa, 13 miles southwest of the Project, electrical service is provided by the Samoa Pacific Group. The Humboldt area's electrical grid covers approximately 3,000 square miles and is connected to the bulk PG&E transmission system by four transmission circuits, which range in length from 31 to 115 miles.

Humboldt County imports the majority of energy consumed in the county. Local biomass resources derived from lumber mill wood residue are used to generate approximately 34 percent of the county's electricity needs at the Fairhaven, Scotia, and Blue Lake Power Plants. About 60 percent of the electricity serving Humboldt County is generated at PG&E's Humboldt Bay Generating Station, most of which is generated using imported natural gas. The remaining 5.2 percent of electricity is produced at small-scale hydropower plants and photovoltaic facilities. Although a majority of Humboldt County's electricity is generated within the county at the

¹ *Run-of-the-river* power generation is a hydroelectric system that generates electricity from flowing water, similar to that of a dam or reservoir. It differs from power generated from a hydroelectric dam in that run-of-the-river primarily uses natural flow rate of water opposed to the power of water falling over a large distance (University of Calgary, 2018).

Humboldt Bay Generating Station, most of this electricity is generated using imported natural gas (CEC, 2018a).

Electricity consumption in Humboldt County generally declined across all sectors from 2010 to 2020 with a more pronounced decrease in the residential sector, as compared to nonresidential. In 2019, Humboldt County consumed approximately 791 gigawatt-hours of electricity, 53.4 percent of which was attributable to nonresidential uses (CEC, 2020b).

Humboldt County and numerous towns and cities in the county are members of the Redwood Coast Energy Authority (RCEA), which administers Humboldt County's Community Choice Energy Program. This program allows local jurisdictions in Humboldt County to procure power independently from various suppliers while maintaining distribution through PG&E (CEC, 2011).

Transportation Fuel

According to the Humboldt County General Plan, in 2010, approximately half of all energy consumed in the county was used as transportation fuel. Humboldt County imports all gasoline and diesel consumed in the county (Humboldt County, 2017). In 2017, sales of gasoline in Humboldt County totaled 55 million gallons (CEC, 2018a) and retail sales of diesel fuel in the county amounted to 9 million gallons (CEC, 2018b).

4.6.2 Regulatory Framework

For a discussion of federal, state and local regulations that are relevant to the Project see Appendix F.

4.6.3 Applicant Proposed Measures

The Project has no Applicant Proposed Measures pertaining to energy conservation.

4.6.4 Environmental Impacts and Mitigation Measures

Impact Discussion

- a) Consume or use energy wastefully, inefficiently, or unnecessarily during construction or operation. *Less than Significant; Short-term; Minor.***

Construction

Construction activities would not reduce or interrupt existing electrical or natural gas services in PG&E's Humboldt service area, as the Project would not require natural gas or electricity provided by PG&E.

Construction of the Project would result in direct fuel consumption for the use of construction tools and equipment, haul truck trips, the use of propane generators for as-needed on-site temporary power, and for vehicle trips to and from the site by construction workers. Project construction is expected to consume approximately 44,334 gallons of diesel fuel for construction

equipment and vendor, hauling, and water truck trips and approximately 8,740 gallons of gasoline for construction worker vehicle trips.

The amount of diesel required for Project construction represents 0.3 percent of the 14 million gallons of diesel fuel sold in Humboldt County in 2016; the gasoline required for the Project represents 0.014 percent of the 61 million gallons of gasoline sold in the county in 2016. Fuel consumption associated with construction would be temporary and localized, as the use of diesel fuel and heavy-duty equipment would not be typical during Project operations. Compliance with state requirements for the use of off-road diesel vehicles that mandate limiting idling to no more than five minutes would reduce fuel consumption during construction and would minimize fuel waste.

Construction-related energy consumption, though minor, would represent irreversible consumption of finite natural energy resources. However, construction activities would not result in long-term depletion of nonrenewable energy resources, as this use would be temporary and would not permanently increase reliance on energy resources that are not renewable. Construction of the Project would not have an adverse effect on existing local or regional energy supply. This construction-related impact on energy resources would be less than significant and minor.

Operations and Maintenance

Operations would require a regional power grid supply at Orleans, Weitchpec, Wautec, and Orick. The minimum amount of energy necessary to operate the broadband system would be used, which would not conflict with any state or local plan for renewable energy or energy efficiency. Power would likely be purchased from RCEA, which operates under a plan to maximize renewable energy. Using recent usage at the Orleans Tower as an estimate for usage at other sites, the Applicant determined that approximately 12,872 kilowatt-hours per year would be needed to operate the Project (Karuk Tribe, 2020). This calculation assumes that all four tower sites would require nearly the same amount of power.

Once installed and operational, the Project would require limited routine maintenance consisting of visual inspections of system components, periodic operation of backup generators, and annual electrical checks of switches and other components. All replacement generators and power sources would operate similarly, but more efficiently than under existing conditions. The one new generator that would be installed at the proposed Orick Tower would run on propane via a 250-gallon propane tank and would consume slightly less than 2 gallons per hour under full load. Generator maintenance would be set to run the unit 12 minutes per week to maintain all elements of the engine in a fully lubricated condition and would facilitate preparedness in the event of a power outage.

There are no unusual Project characteristics that would necessitate the use of construction equipment that would be less energy efficient than construction equipment used during comparable projects in the region.

Energy use associated with Project operation and maintenance would consist of electricity used in Orleans, Weitchpec, Wautec, and Orick; fuel used by maintenance staff members' vehicle trips; and routine operation of the propane-fueled generators. The Applicant estimates that annual combined electricity use at these facilities listed above would total 12,872 kilowatt-hours per

year. When compared to per capita electricity use in Humboldt County (7,000–7,500 kilowatt-hours), the annual electricity demands (direct effects) of the Project would not be significant and would not represent a wasteful or inefficient use of energy. The amount of electricity required from the regional power grid would adversely affect local or regional energy supplies or peak-and base-period demands for electricity. Indirect effects could also occur if the availability of internet services increases the local use of electricity in Humboldt County. However, given the small population of residents in the region, such effects would be negligible.

Maintenance activities for the Project would be limited, consisting of routine inspections and periodic operation of backup generators. Vehicle trips generated by maintenance operations are expected to consume approximately 110 gallons of gasoline annually. When compared to the 2016 retail sales of gasoline in Humboldt County (61 million gallons), this amount of gasoline consumption would be negligible. Routine operation of the backup generators is expected to consume approximately 21 gallons of propane annually. Considering that a propane stove will generally use approximately 35 gallons annually, the amount of propane required during Project operation and maintenance would be negligible.

Operation and maintenance activities would require a minimal amount of energy. Energy consumption required for operation and maintenance would not be wasteful or inefficient. This operational impact on energy resources would be less than significant and minor.

Mitigation: None required.

b) Conflict with or obstruct a state or local plan for renewable energy or energy efficiency. *No Impact; Beneficial.*

Construction and operation of the Project would result in an increase in energy consumption relative to baseline conditions; however, as identified in response to question a), the Project would require a minimal amount of energy during construction and operation. As analyzed in response to question b) in Section 4.8, the Project would not exceed any regional or quantitative thresholds related to greenhouse gases. Additionally, the Project would comply with all regulations designed to reduce construction equipment idling and reduce the inefficient use of fuel. As a result, the Project would not result in the inefficient use of fuel or energy and would result in long-term increased reliance on non-renewable energy resources. Therefore, the Project would not conflict with the State of California’s Integrated Energy Policy or the National Energy Policy Act of 2005.

Regarding vehicle energy usage, the NHTSA required manufacturers of light-duty vehicles to meet an estimated combined passenger car and light truck average fuel economy level of 34.1 miles per gallon (mpg) by model year 2016. In the course of more than 30 years, the National Energy Conservation Policy Act’s regulatory program has resulted in improved fuel economy throughout the United States’ vehicle fleet, and has also protected against inefficient, wasteful, and unnecessary use of energy. Regardless of the uncertainty for fleet-wide emissions past 2021, the projected fleet-wide mpg for light-duty vehicles is continuing to become more efficient. Vehicles used by Project construction and maintenance workers would incorporate California standards, which are even stricter than national standards; therefore, the Project would not impede the efficient use of fuel for light-duty vehicles.

The Project would implement an integrated broadband network in Humboldt County, which would support the goals of the RePower Humboldt Comprehensive Energy Action Plan. Implementation of the Project would enable Humboldt County to promote smart technologies and smart controls (see Strategy 2.2.6) and strengthen broadband infrastructure (see Strategy 3.1.1), resulting in increased energy efficiency, which is a beneficial impact. Furthermore, the Project would not result in an increased reliance on nonrenewable energy sources and would comply with fuel and energy efficiency regulations; therefore, it would not conflict with or obstruct a state or local plan for renewable energy or energy efficiency. Under this criterion, no impact would occur.

Mitigation: None required.

4.6.5 NEPA Alternatives

No-Project Alternative

Under the No-Project Alternative, the Project would not be constructed, operated and maintained, or decommissioned and internet services would generally continue as under existing conditions. Energy use in the region would not change because the Project would not be constructed. Therefore, under the No-Project Alternative, no impact on energy conservation would occur, compared to existing conditions.

4.7 Geology, Soils, and Paleontological Resources

	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
7. GEOLOGY, SOILS, AND PALEONTOLOGICAL RESOURCES—				
Would the project:				
a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Be located on geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Be located on expansive or corrosive soil, creating substantial risks to life or property? ¹	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Directly or indirectly destroy a unique paleontological resource or site or unique geological feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

This section evaluates whether construction, operation, and maintenance of the Project would result in potential adverse impacts related to geology, soil conditions, seismicity, or paleontological resources. The evaluation and analysis are based, in part, on review of various geologic maps and reports. The primary sources include available resources from the U.S. Geological Survey (USGS) and the California Geological Survey (CGS). Both short-term and long-term Project effects are analyzed to determine their significance under CEQA and NEPA. When Project impacts are determined to be significant or potentially significant, mitigation measures to avoid or reduce those impacts are identified. For the purposes of the evaluation of geology, soil conditions, seismicity, and paleontological resources, the Study Area comprises the

¹ The California Building Code (CBC), based on the International Building Code (IBC) and the now defunct Uniform Building Code (UBC), no longer includes a Table 18-1-B. Instead, Section 1803.5.3 of the CBC describes the criteria for analyzing expansive soils.

same geographical extent as the Project area (the footprint of all components of the Project including all areas of temporary and/or permanent ground disturbance).

4.7.1 Environmental Setting

Regional Geology

The Project area is located in Humboldt County, California, in an area underlain by Franciscan Complex metamorphic and sedimentary lithologies. The Franciscan Complex is a Mesozoic terrane found throughout the Coast Range Province. The Coast Ranges are bounded by the Pacific Ocean to the west and the Great Central Valley² to the east. High topographic relief is characteristic of these ranges, as well as the Study Area. All geologic units within the Study Area are listed in **Table 4.7-1**.

**TABLE 4.7-1
 GEOLOGIC UNITS IN THE STUDY AREA**

Symbol	Unit Name	Period	Description
Segment 1			
Q	Alluvium	Quaternary (Late Holocene Epoch)	Mostly poorly consolidated, poorly sorted, permeable flood plain deposits.
KJf (sfm)	South Fork Mountain Schist	Late Cretaceous	A quartz and sericite dominated, medium-grade metamorphic rock (Irwin, 1960).
Jg	Galice Formation	Jurassic	Marine; slate, metagreywacke, and greenstone.
Jum	Ultramafic rocks—partially to completely serpentinitized	Jurassic	Metamorphosed iron and magnesium-rich rocks with serpentinite.
Segment 2			
Qls	Landslide deposits	Quaternary (Late Holocene Epoch)	Slope-failure deposits of displaced materials, ranging from boulder to pebble-sized fragments, of varying mineral compositions.
KJf (sfm)	South Fork Mountain Schist	Late Cretaceous	A quartz and sericite dominated, medium-grade metamorphic rock (Irwin, 1960).
Segment 3			
Qc	Fluvial deposits	Quaternary (Pleistocene Epoch)	Gravel, sand, and silt.
KJf*	Franciscan mélange ³ terrane	Cretaceous	Accreted terranes of various marine and continental material of sedimentary, igneous, and metamorphic origins.
KJf (ss)	Shale, sandstone, and conglomerate	Cretaceous	Siliciclastic rocks with progressively larger grain sizes, containing varying percentages of quartz, feldspars, and lithic fragments.

² The Great Central Valley refers to the Sacramento and San Joaquin Valleys, which make up the larger Valley.

³ *Mélange* is a French term meaning “mixed”; in geology it is used to describe “a mappable body of rock that includes fragments and blocks of all sizes, both exotic and native, embedded in a fragmented and generally sheared matrix” (Bates and Jackson, 1984).

**TABLE 4.7-1 (CONTINUED)
 GEOLOGIC UNITS IN THE STUDY AREA**

Symbol	Unit Name	Period	Description
Segment 4 and Orick Tower			
Qha	Young alluvial deposits, undifferentiated	Quaternary (Holocene Epoch)	Mostly poorly consolidated, poorly sorted, permeable flood plain deposits; composed of sand, silt, and gravel.
Qhc	Stream channel deposits	Quaternary (late Holocene)	Fluvial deposits within active stream channels composed of loose sand, silt, and gravel.
Qsc	Terrace gravels of Surpur Creek	Quaternary (Pleistocene Epoch)	Alluvial terrace gravels with minor sand and silt.
KJfc	Incoherent unit of Coyote Creek	Cretaceous and Jurassic	Melange unit consisting of brecciated and sheared mudstone and sandstone enclosing blocks of chert, greenstone, and sandstone.
KJfg	Transitional rocks of the Grogan Fault Zone	Cretaceous and Jurassic	Metamorphosed mudstone and sandstone.
KJf (ss)	Shale, sandstone, and conglomerate	Cretaceous	Siliciclastic rocks with progressively larger grain sizes, containing varying percentages of quartz, feldspars, and lithic fragments.
Segment 5			
Qbs	Beach deposits	Quaternary (latest Holocene)	Well-sorted, fine- to course-grained sand with some fine gravel.
Qha	Young alluvial deposits, undifferentiated	Quaternary (Holocene Epoch)	Alluvium deposited in fan, terrace, or basin environments. Typically consists of unconsolidated, poorly-sorted sand, silt, and gravel.
Qhf	Young alluvial fan deposits	Quaternary (Holocene Epoch)	Unconsolidated, moderately to poorly-sorted sand, gravel, silt, and clay.
Qds	Dune sand	Quaternary (Holocene Epoch)	Active dunes and older aolian deposits; very well-sorted, fine- to medium-grained sand.
Qe	Estuarine deposits	Quaternary (Holocene Epoch)	Unconsolidated clay, silt, and fine sand deposited in estuary and tidal flats.
Qls	Landslide deposits	Quaternary (historical to Pleistocene Epoch)	Relatively large, deep-seated landslides and slide complexes where the existence is considered definite or probable.
Qm	Undeformed marine shoreline and aolian deposits	Quaternary (Holocene to late Pleistocene Epoch)	Gravel and sand deposited in marine terraces and dunes on along present shorelines. In northern Eureka quadrangle, near Arcata, includes older late Pleistocene sand dunes.
Qt	Undifferentiated nonmarine terrace deposits	Quaternary (Holocene and Pleistocene Epoch)	Uplifted gravel, sand, silt, and clay, deposited in fluvial settings. In western Eureka quadrangle, includes late Pleistocene Hookton and Rohnerville Formations of Ogle, in addition to late Pleistocene and Holocene fluvial terrace units.
Qu	Undifferentiated marine and nonmarine overlap deposits	Quaternary (Pleistocene to late Pliocene Epoch)	Weakly consolidated sands, silts, and gravels representing nearshore marine, beach, dune, lagoon, and alluvial settings. Portions are considered part of, or equivalent to the upper Falor Formation and/or Wildcat Group.
Qmt	Marine terrace deposits	Quaternary (Pleistocene Epoch)	Marine terrace deposits consisting of sands and gravels covered by colluvium and alluvium

TABLE 4.7-1 (CONTINUED)
GEOLOGIC UNITS IN THE STUDY AREA

Symbol	Unit Name	Period	Description
QTW	Marine and nonmarine overlap deposits	Quaternary to Tertiary (late Pleistocene to middle Miocene)	Thin-bedded to massive, weakly lithified siltstone, fine- to medium-grained sandstone, silty to diatomaceous mudstone. Includes lenses on pebble or boulder conglomerate, carbonate concretions, and abundant molluscan fossils. Includes the Wildcat Group and the Falor Formation.
KJfm	Mélange of the Central Belt	Late Cretaceous to Early Jurassic	Sheared argillite and graywacke matrix around coherent masses graywacke, greenstone, chert, serpentinite, and blueschist blocks.
KJfrc	Redwood Creek Schist	Early Cretaceous to Late Jurassic	Fine-grained schist; typical mineral assemblage consists of quartz, chlorite, white mica, and albite.
KJfpp	Patricks Point unit of Aalto and others, 1981	Cretaceous to Jurassic	Foliated and moderately reconstituted mudstone, sandstone, and minor conglomerate.
KJf (rc)	Schist of Redwood Creek	Mid-Cretaceous	Metagraywacke, fine-grained schist, and minor laminated greenstone (Cashman et al. 1995).

SOURCES: Wagner and Saucedo, 1987; McLaughlin et al., 2000; Delattre and Rosinski, 2012.

Soils

Expansive Soil

Soil expansion, linear extensibility, or shrink-swell potential refers to the change in volume of soil as moisture content is increased or decreased between a moist and dry state. This phenomenon can cause differential and cyclical movements that can cause damage and/or stress to shallow founded structures and equipment. Issues with expansive soils typically occur near the ground surface where changes in moisture content typically occur. The types of soils that are most susceptible to volume change due to loss of moisture content are types with high clay content. Expansive soils are a concern as they can potentially damage structures by warping the soils that they are founded in. The U.S. Natural Resources Conservation Service's (NRCS) Web Soil Survey provides data mapping the extent and degree of expansive soils (NRCS, 2017a, 2017b, 2017c, 2017d). The soils within the Study Area generally have a low to moderate linear extensibility. Soil properties that could affect Project components are summarized in **Table 4.7-2**.

TABLE 4.7-2
SUMMARY OF SOIL PROPERTIES

Soil Criteria	Segment 1	Segment 2	Segment 3	Segment 4	Segment 5
Expansive Soils (a)	Low to moderate	Low to moderate	Low to moderate	Low to moderate	Low to moderate
Corrosion—Concrete	Moderate to high	Low to high	Moderate to high	Moderate to high	Moderate to high
Corrosion—Steel	Low to moderate	Moderate	Moderate to high	Moderate to high	Moderate to high

NOTES:

(a) Also referred to as shrink-swell potential or linear extensibility.

SOURCES: NRCS, 2017e, 2017f, 2017g, 2017h, 2017i, 2017j

Soil Corrosivity

The corrosivity of soils pertains to the potential for certain soils to cause an electrochemical or chemical reaction that can corrode or weaken uncoated steel or concrete. The rate at which these materials corrode is dependent on a number of variables, but not limited to: soil moisture, texture, mineral content, and acidity. The rate of corrosion of steel is based on soil moisture, particle-size distribution, acidity, and electrical conductivity. Corrosion of concrete is based on the sulfate and sodium content, texture, moisture and acidity of the soil. The risk of corrosion is expressed as low, moderate, or high.

The NRCS Web Soil Survey, provides data assessing the corrosivity of soils, specifically the corrosion of steel and concrete (NRCS, 2017e, 2017f, 2017g, 2017h, 2017i, 2017j). Analysis of the Study Area, with an emphasis on the components of the Project that will include underground installation of fiber optic cables or where structures would come into contact with soils beneath the surface, shows some variability in soil corrosivity. The corrosion risks are summarized above in Table 4.7-2.

Geologic and Seismic Hazards

Fault Rupture

The Project area is located in a seismically active region of California that contains both Holocene-active (surface rupture within the last 11,000 years; USGS uses 15,000 years; CGS, 2018) and Pre-Holocene faults (Quaternary age or within the last 1.6 million years; USGS, 2017). There is one Holocene-active fault (McKinleyville Fault) and two Pre-Holocene faults (the Bald Mountain–Big Lagoon Fault Zone and the Grogan Fault) in the Project area, the latter transecting Segment 4 in the town of Orick and the former transecting Segment 5 to the southeast of Big Lagoon (CGS, 2010).

The southern portion of Segment 5 is located within an Earthquake Fault Zone (EFZ) as delineated on the Special Studies Zones map for the Arcata Quadrangle published by the California Geological Survey (CGS) as required by the Alquist-Priolo Earthquake Fault Zoning Act. The McKinleyville Fault (an extension of the Mad River Fault Zone) is designated an EFZ and transects the southern portion of Segment 5 approximately 0.6-mile west of intersection of Central Avenue and Murray Road, in McKinleyville (CGS, 2019).

Additionally, the Holocene-active Cascadia Subduction Zone is located off the coast of Northern California and Southern Oregon, approximately 50.0 miles to the east (CGS, 2010). While the Cascadia Subduction Zone would not directly transect any of the proposed segments, it has the potential cause strong seismic ground shaking that could affect the Project. Geologic faults in the Project vicinity are shown in **Figure 4.7-1**.

Ground Shaking

Ground shaking due to fault ruptures is widely known to cause extensive damage to life and property. The extent of the damage varies by event and is determined by several factors,

including (but not limited to): magnitude and depth of the earthquake, distance from epicenter, duration and intensity of the shaking, underlying soil and rock types, and integrity of structures.

The Study Area is in a seismically active region of California and is subject to strong ground shaking. According to the ShakeMap that corresponds with the earthquake planning scenario generated by the USGS, if a magnitude 7.2 event were to occur on the McKinleyville Fault the Study Area could experience very strong to violent ground shaking with moderate to heavy damage expected (USGS, 2016a). A similar planning scenario (USGS, 2016b) designed for a potential magnitude 9.0 earthquake on the Cascadia megathrust (Cascadia Subduction Zone) indicates that ground shaking intensity would very likely also be very strong to violent.

As noted previously, several mapped active or potentially active faults underlies the Study Area. In 2015, the 2014 Working Group on California Earthquake Probabilities⁴ (Field et al., 2015) presented the third Uniform California Earthquake Rupture Forecast (UCERF3). According to this report, there is a 95 percent probability of a magnitude 6.7 or greater earthquake in the Northern California Region within 30 years (Field et al., 2015), with a 10 percent probability of a magnitude 8.0 or 9.0 earthquake somewhere along the 750-mile-long Cascadia megathrust in the next 30 years (USGS, 2008).

Liquefaction and Lateral Spreading

Liquefaction is a phenomenon in which unconsolidated, water saturated sediments become unstable due the effects of strong seismic shaking. During an earthquake, these sediments can behave like a liquid, potentially causing severe damage to any overlying structures. *Lateral spreading* is a variety of minor landslide that occurs when unconsolidated liquefiable material breaks and spreads due to the effects of gravity, usually down gentle slopes. The potential damaging effects of liquefaction include differential settlement, loss of ground support for foundations, ground cracking, and buckling of deep foundations due to ground settlement.

According to a map of seismic safety and relative slope instability in the Study Area, approximately 1 mile of Segment 5 would cross through areas of potential liquefaction; on Murray Road to the west of Fieldbrook, between Old Railroad Grade Road and Hughes Way (Humboldt County, 2017a).

Landslides

Landslides are one of the various types of downslope movements in which rock, soil, and other debris are displaced due to the effects of gravity. The potential for material to detach and move down slope depends on a variety of factors including the type of material, water content, steepness of terrane, and more. Landslides can occur on slopes of 15 percent or less, but the probability is greater on steeper slopes that exhibit old landslide features such as scarps, slanted vegetation, and transverse ridges. The Study Area is located within areas of low to high slope instability (which, in this case refers to landslide potential), with the most unstable slopes

⁴ Referred to as WGCEP 2014, this is a working group comprised of seismologists from the U.S. Geological Survey (USGS), California Geological Survey (CGS), Southern California Earthquake Center (SCEC), and California Earthquake Authority (CEA).

affecting Segment 3 and portions of Segments 1 and 5. Segments 1 and 4 are in areas of moderate instability, and the parcel of land that would be the location of Orick Tower is in a flat area with low instability that is surrounded by an area of moderate instability (Humboldt County, 2017b). Additionally, geologic mapping indicates the presence of historic and current landslides throughout the Study Area—in particular, Segments 1, 2, and 5 (Wagner and Saucedo, 1987; Dellatre and Rosinski, 2012). Relative slope stability in the Project area is shown in **Figure 4.7-2**.

Subsidence

Subsidence is the gradual lowering of the land surface due to compaction of underlying materials. Subsidence can occur as a result of the extraction of groundwater and oil, which can cause subsurface clay layers to compress and lower the overlying land surface. The Project does not include the extraction of water or oil.

Paleontological Resources

Paleontological resources are the fossilized remains or impressions of plants and animals, including vertebrates, invertebrates, and microscopic plants and animals (microfossils). They are valuable, non-renewable, scientific resources used to document the existence of extinct life forms and to reconstruct the environments in which they lived. The age, abundance, and distribution of fossils depend on the geologic formation in which they occur.

The standard practice in analyzing paleontological resources includes using guidance from the Society of Vertebrate Paleontology (SVP). Although not a law or regulation in the legal sense, these guidelines have become the standard in the industry (SVP, 2010).

The SVP defines the level of potential as one of four sensitivity categories for sedimentary rocks: high, undetermined, low, and no potential as listed below.

- **High Potential.** Rock units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered are considered to have a high potential for containing additional significant paleontological resources.
- **Low Potential.** Rock units that are poorly represented by fossil specimens in institutional collections or, based on general scientific consensus, only preserve fossils in rare circumstances and the presence of fossils is the exception not the rule.
- **Undetermined Potential.** Rock units for which little information is available concerning their paleontological content, geologic age, and depositional environment are considered to have undetermined potential.
- **No Potential.** Rock units such as high-grade metamorphic rocks and plutonic rocks that will not preserve fossil resources.

As listed in Table 4.7-1, *Geologic Units in the Study Area*, Holocene (Q, Qls, Qha, Qhc, Qbs, Qhf, Qds, Qe, Qm, Qt), Pleistocene (Qc, Qsc, Qls, Qm, Qt, Qu, Qmt, QTw), Pliocene (Qu and QTw), Miocene (QTW), Jurassic (Jg, Jum, KJfc, KJfg, KJf[ss]), and Cretaceous-age (KJf, KJf[sfm], KJf[ss], KJfc, KJfg, KJfrc, KJfpp) deposits are mapped at the surface within the Study Area.

The Jurassic and Cretaceous-age deposits are from the Franciscan Formation, which are largely metamorphosed and fragmented blocks of rock. These deposits have a low to no potential to contain paleontological resources due to exposure to extreme heat and pressure. Furthermore, known paleontological resources in the Franciscan Formation consist of radiolarians from chert and are well-known.

Generally, Holocene-age sedimentary deposits have low paleontological sensitivity due to the recent age of these deposits. However, the deeper, older layers of Holocene-age deposits increase in paleontological potential; therefore, deeper layers of these deposits have a high potential to contain significant paleontological resources. In general, Pleistocene-age sedimentary deposits have a high potential to contain significant paleontological resources, as is evident by the numerous fossil discoveries made within Pleistocene-age deposits throughout Humboldt County. The Pliocene and Miocene-age deposits (Qu and QTw) contain deposits which can be attributed to the Wildcat Group, which is known from the published literature and museum records to contain fossiliferous deposits (see below).

On June 13, 2018, Environmental Science Associates requested a database search of the University of California Museum of Paleontology (UCMP) collection for records of fossil localities within a 2.5-mile buffer around the Project alignment. The purpose of the UCMP records search was to: (1) determine whether any previously recorded fossil localities occur in the Study Area, (2) assess the potential for disturbance of these localities during construction, and (3) evaluate the paleontological sensitivity in the Study Area.

The records search returned no known localities within the 2.5-mile buffer of the Project alignment; however, there are identified vertebrate and invertebrate sites along the coast in Humboldt County. Four vertebrate fossils have been recovered from the Moonstone Beach Formation and 22 vertebrate fossils have been recovered from the Rio Dell Formation of the Wildcat Group. Additionally, six vertebrate fossils have been recovered unnamed Pleistocene-age deposits and 16 vertebrate fossils have been recovered from unnamed Miocene and Pliocene-age deposits within Humboldt County (UCMP, 2020; Holroyd, 2018). A review of the scientific literature further indicates the presence of vertebrate fossils within the Moonstone Beach and Rio Dell formations, as well as the other unnamed Pleistocene deposits (Harvey, 1994; Boessenecker 2011; Tsai and Boessenecker, 2015).

While the exact locations are not provided by the UCMP records search, approximate locations can be inferred from the localities names.⁵ Based on the localities names provided by the UCMP, some of these fossil sites are in proximity to the Project alignment (i.e., Moonstone Beach, Crannell Junction, Little River Rock, and Little River Beach).

Segments 1 through 4 would mainly be constructed within Holocene-age sedimentary deposits and Franciscan Formation, which have a low potential to contain paleontological resources.

⁵ The precise locations of paleontological sites are not provided by the UCMP; record searches only return the general localities of the closest recorded sites. This is the established practice because paleontological resources are nonrenewable, and their scientific, cultural, and aesthetic values can be significantly impaired by disturbance. To deter vandalism, artifact hunting, and other activities that can damage cultural resources, the locations of paleontological and cultural resources are confidential.

Segment 5 would be constructed within Holocene, Pleistocene, Pliocene, and Miocene-age deposits— including deposits from the Wildcat Group, which have a high potential to contain paleontological resources.

4.7.2 Regulatory Framework

For a discussion of federal, state and local regulations that are relevant to the Project see Appendix F.

4.7.3 Applicant Proposed Measures

The following Applicant Proposed Measures (APMs) related to geology, soils, and paleontological resources have been included as part of the Project (Karuk Tribe, 2020):

- **APM GEN-1:** Environmental Compliance Monitors hired by the Tribe will monitor construction activities and will report to the Tribe and to the agencies regarding construction compliance with permit terms and conditions. Monitoring activities will be structured in accordance with an Environmental Compliance Management Plan, developed by the Tribe and approved by the lead state and federal agencies prior to construction.
- **APM GEN-2:** Forest Plan Standards and Guidelines (as amended) will apply on NFS lands. Ground-disturbing activities will comply with all Agency-wide, regional, and state BMPs.
- **APM GEN-3:** Redwood National Park (RNP) policies and regulations will apply within the RNP. Ground-disturbing activities will comply with listed seasonal constraints and other requirements.
- **APM GEN-4:** As part of the Karuk Tribe’s environmental compliance commitment, the Construction Contractor(s) will be contractually bound to comply with all laws, regulations, and permit requirements, including the mitigation measures and other specific stipulations and methods that are developed as part of the NEPA/CEQA process.
- **APM GEN-5:** Directional drilling will be used where needed and approved impacts to water, biological, and cultural resources.
- **APM GEN-9:** The Construction Contractor will be required to develop and implement a Worker Environmental Awareness Program (WEAP).
- **APM SOIL-1:** Disturbance of soils and rocks and vegetation removal will be limited to the minimum area necessary for access and construction. There will be no removal of any oak trees or rock outcrops.
- **APM WET-3:** If trench dewatering is needed, it will be completed per the Caltrans BMP NS-2 specifications and Field Guide to Construction Site Dewatering.
- **APM WATER-1:** The construction contractor will be required to develop and file a storm water pollution prevention plan (SWPPP) and to comply with the permit conditions as issued by the State Water Resources Control Board, Region 1.
- **APM OM-2:** The Tribe will provide crews and contractors with maps showing environmentally sensitive areas; these maps will include work zones as well as right-of-way (ROW) areas where ground disturbance will be avoided.

4.7.4 Environmental Impacts and Mitigation Measures

a) Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i. Rupture of a known earthquake fault. *Less than Significant; Localized; Minor.*

The southern portion of Segment 5 of the Project alignment is located within an EFZ; The McKinleyville Fault (an extension of the Mad River Fault Zone) is designated an EFZ and transects the southern portion of Segment 5 approximately 0.6 mile west of the intersection of Central Avenue and Murray Road, in McKinleyville. However, because the Project does not propose to construct any habitable structures, and the Project would not exacerbate the existing risks associated with surface fault rupture. Therefore, this impact would be less than significant and minor.

ii. Strong seismic ground shaking. *Less than Significant; Localized; Minor.*

In the event of an earthquake, the entire Project area would be subject to the effects of strong seismic ground shaking as the Project area is located near several fault zones, including the Mad River fault zone and the Cascadia Subduction Zone (Cascadia megathrust). The Humboldt County General Plan includes a map that depicts the ground shaking potential for Humboldt County in the event of a major earthquake in one of the major fault zones in the County. According to the map, each of the Project components are in a region that is subject to strong seismic ground shaking in the event of an earthquake. The Mad River Fault Zone and the Grogan Fault directly transect Project components, and although the Cascadia megathrust is approximately 50.0 miles away from any Project component, an event on that fault is capable of producing severe ground shaking (Humboldt County, 2017c; USGS, 2016b). While the Project area is subject to the effects of strong seismic ground shaking, activities associated with the Project would not exacerbate the existing conditions in the area, nor would the Project expose people or structures to the adverse effects (i.e., loss, injury, and/or death) of seismically induced ground shaking.

Additionally, all new structures that would be installed as part of the Project would be designed and constructed consistent with CPUC GO 95 and 128, as well as the applicable sections of the CBC. As required by the CBC, upon certification of the CEQA document, the Applicant would be required to prepare a site-specific geotechnical report, which would address any geotechnical hazards that may affect the Project, including strong seismic ground shaking. The Project would adhere to the design requirements, recommendations, and guidelines outlined in CPUC GO 95 and 128, and the CBC. Therefore, ground shaking impacts would be less than significant and minor.

iii. Seismic-related ground failure, including liquefaction. *Less than Significant; Localized; Minor.*

As previously discussed, according to the Northern Humboldt Seismic Safety map and the Humboldt County Seismic Safety and Relative Slope Stability map, included in the Humboldt County General Plan (2017), approximately one mile of new development on Segment 5 would be within an area of potential liquefaction.

The maps also delineate areas of instability in the geologic units and soils in the Study Area. While there are some portions of the Project that would be located within areas considered to

have a high instability, these portions of the Project would consist of installing cables on existing poles and would not include any habitable structures. Additionally, as mentioned above, all new developments under the Project would be designed and constructed consistent with CPUC and CBC guidelines. As required by the CBC, a site-specific geotechnical report would be prepared for the Project that would identify any geotechnical hazards that may affect the Project, and would provide recommendations to reduce impacts from these potential hazards. The Project would adhere to the design requirements, recommendations, and guidelines outlined in CPUC GO 95 and 128, and the CBC. Therefore, liquefaction impacts would be less than significant and minor.

iv. Landslides. *Less than Significant; Localized: Minor.*

While the potential for slope instability ranges from low to high throughout the Project area, the Project components that would be affected by areas of high slope instability would consist of cable installation on existing poles, therefore, the Project would not subject people or structures to adverse effects involving landslides. Additionally, as mentioned above, all new developments under the Project would be designed and constructed consistent with CPUC and CBC guidelines. As required by the CBC, a site-specific geotechnical report would be prepared for the Project that would identify any geotechnical hazards that may affect the Project, and would provide recommendations to reduce impacts from these potential hazards. The Project would adhere to the design requirements, recommendations, and guidelines outlined in CPUC GO 95 and 128, and the CBC. Therefore, impacts related to landslides would be less than significant and minor.

Mitigation: None required.

b) Result in substantial soil erosion or the loss of topsoil. *Less than Significant; Localized; Minor.*

The Project would include ground-disturbing construction activities, including trenching and directional drilling, which could increase the risk of erosion or sediment transport. Total ground disturbance for Orick Tower and the trench segments would be more than 1 acre. Construction of the Project would have the potential to result in soil erosion during excavation, grading, trenching, and soil stockpiling. Because the overall footprint of construction activities would exceed one acre, the Project would be required to comply with the national pollutant discharge elimination system (NPDES) General Permit for Discharges of Storm Water Runoff Associated with Construction and Land Disturbance Activities (Order 2009-0009-DWQ, NPDES No. CAS000002; as amended by Orders 2010-0014-DWQ and 2012-006-DWQ) (Construction General Permit), described above in Section 4.7.2 and as discussed in Section 4.10. This state requirement was developed to ensure that stormwater runoff is managed and erosion is controlled on construction sites. The Construction General Permit requires preparation and implementation of a SWPPP, which requires applications of BMPs to control run-on and runoff from construction work sites. These BMPs would include, but would not be limited to, physical barriers to prevent erosion and sedimentation, construction of sedimentation basins, limitations on work periods during storm events, use of infiltration swales, protection of stockpiled materials, and a variety of other measures that would substantially reduce or prevent erosion from occurring during construction. Additionally, APM WATER-1 requires the construction contractor to develop and file a SWPPP. Compliance with IPM WATER-1 and other existing regulations, impacts

associated with soil erosion and loss of topsoil during construction would be less than significant and minor.

Mitigation: None required.

- c) Be located on geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. *Less than Significant; Minor.***

Some areas of the Project alignment are located in an area of potential liquefaction and are located in areas of high instability (specifically landslide potential). Although that there is little to no risk of ground failures at the site where the Orick Tower would be erected, the Town of Orick is located on young alluvial deposits, a geologic unit that has the potential to become unstable in the event of a major earthquake in the area. As the Orick Tower would not be an inhabited structure, this would be a less than significant and minor impact. Construction activities associated with the Project would not exacerbate any of the existing conditions in the Study Area. Additionally, as mentioned above, all new developments under the Project would be designed and constructed consistent with CPUC and CBC guidelines. As required by the CBC, a site-specific geotechnical report would be prepared for the Project that would identify any geotechnical hazards that may affect the Project, and would provide recommendations to reduce impacts from these potential hazards. Adherence to the design requirements, recommendations, and guidelines outlined in CPUC GO 95 and 128, and the CBC, would reduce impacts to less than significant and minor.

Mitigation: None required.

- d) Be located on expansive or corrosive soil, creating substantial risks to life or property. *Less than Significant; Localized; Minor.***

Expansive and corrosive soils in the Study Area have the potential to impact new structures that would be installed as part of the Project. The CBC requires that the evaluation of expansive and corrosive soils be incorporated into geotechnical reports for sites with soils known to have such properties. For sites with known expansive or corrosive soils, geotechnical reports provide specific requirements for replacing problematic soils with engineered fill to change the properties of the soils and reduce the risk of impacts on new developments. The Project would adhere to the design requirements, recommendations, and guidelines outlined in CPUC GO 95 and 128, and the CBC. Therefore, impacts would be less than significant and minor.

Mitigation: None required.

- e) Have soils incapable of adequately supporting use of septic tanks or alternative wastewater disposal systems. *No Impact; None.***

The Project would not use septic tanks or other on-site wastewater disposal systems; therefore, no impact related to the adequacy of soils to support such systems would occur. This significance criterion is not applicable to the Project.

Mitigation: None required.

f) Directly or indirectly destroy a unique paleontological resource or site or unique geological feature. *Less than Significant; Localized; Moderate.*

The loss of a unique paleontological resource or site that could yield important information about prehistory, or past organisms and environments, would be considered a significant environmental impact under CEQA. Direct impacts on paleontological resources primarily concern the potential destruction of nonrenewable paleontological resources and the loss of information associated with these resources. If potentially fossiliferous bedrock or surficial sediments are disturbed, the disturbance could result in the destruction of paleontological resources and subsequent loss of information.

Geologic mapping indicates that Holocene, Pleistocene, Pliocene, and Miocene-age deposits—including deposits from the Wildcat Group, are exposed at the surface along Segment 5. However, approximately 88 percent of this segment would be installed on existing poles with minimal or no ground disturbance. The remaining 12 percent would be installed in roadside ditches by trenching; this equates to approximately 3 miles of trenching along Segment 5.

The portion of Segment 5 for which trenching activities are planned, would occur within Holocene to Pleistocene-age marine shoreline, aolian, and nonmarine terrace deposits, mapped as Qm and Qt (see Table 4.7-1 for descriptions of these units), and the Pleistocene to Miocene-age marine and nonmarine overlap deposits (mapped as QTw), which contain deposits that can be attributed to the fossiliferous Wildcat Group. Trenching would begin around the intersection of Murray Road and Hughs Way, and would follow Murray Road for approximately 3 miles south, then southwest toward McKinleyville (as depicted in Figure 2-8). Trenching activities are expected to include excavation of a trench approximately 6-12 inches wide and 3 feet (36 inches) deep within the existing utility corridor of the roadway. The depth of excavation associated with the Project would not extend beyond the depths of the existing underground utilities. Therefore, excavation would not occur in previously undisturbed sediments.

Although paleontological resources are known to occur within Holocene-age deposits sparsely throughout California, they are generally only known to occur in the deeper layers of these deposits; as trenching activities are only expected to disturb 3 feet below grade, it is unlikely that any paleontological resources will be encountered within Holocene-age deposits along Segment 5. The geologic unit mapped as QTw is known to contain fossiliferous deposits from the Wildcat Group. However, because Project construction activities would not require excavation into previously undisturbed sediments, there is a very low potential to encounter any significant paleontological resources within the Wildcat Group deposits. As the Project would not encounter and inadvertently destroy any significant paleontological resources, this potential impact would be less than significant.

Mitigation: None required.

4.7.5 NEPA Alternatives

No-Project Alternative

Under the No-Project Alternative, the Project would not be constructed, operated and maintained, or decommissioned and internet services would generally continue as under existing conditions. Therefore, under the No-Project Alternative, no impact on geology, soils, and paleontological resources would occur.

4.8 Greenhouse Gas Emissions

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
8. GREENHOUSE GAS EMISSIONS — Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

This section evaluates the potential for the Project to result in impacts associated with greenhouse gas (GHG) emissions during construction, operation, and maintenance activities. Due to the inherently global nature of greenhouse gas emissions, no Study Area was defined for this analysis.

4.8.1 Environmental Setting

Climate Change

According to the U.S. Environmental Protection Agency (EPA), the term *climate change* refers to any significant change in measures of climate (such as temperature, precipitation, or wind) lasting for an extended period (over several decades or longer). There is scientific consensus that climate change is occurring and that human activity contributes in some measure (perhaps substantially) to that change. Gases that trap heat in the atmosphere are often called GHGs. Emissions of GHGs, if not sufficiently curtailed, are likely to contribute further to increases in global temperatures.

The potential effects of climate change in California include sea level rise and reductions in snowpack, as well as an increased number of extreme-heat days per year, high ozone days, large forest fires, and drought years (CARB, 2014). Globally, climate change could affect numerous environmental resources through potential, though uncertain, changes in future air temperatures and precipitation patterns. According to the International Panel on Climate Change, the observed and/or projected effects of climate change vary regionally, but include the following direct effects (IPCC, 2014):

- Changing precipitation and snowmelt patterns.
- Negative effect on crop yields.
- Increased heat waves, drought, flood, wildfires, and storm events.
- Reduced renewable water resources in most dry subtropical regions.
- Ocean acidification damage to marine ecosystems.

In addition, many secondary effects are projected to result from climate change, including a global rise in sea level, ocean acidification, impacts on agriculture, changes in disease vectors,

and changes in habitat and biodiversity. The possible outcomes and feedback mechanisms involved are not fully understood, and much research remains to be done; however, over the long term, the potential exists for substantial environmental, social, and economic consequences.

Greenhouse Gas Emissions

GHG emissions that result from human activities primarily include carbon dioxide (CO₂), with much smaller amounts of nitrous oxide, methane (often from unburned natural gas), sulfur hexafluoride from high-voltage power equipment, and hydrofluorocarbons and perfluorocarbons from refrigeration/chiller equipment. Because these GHGs have different warming potentials (i.e., the amount of heat trapped in the atmosphere by a certain mass of the gas), and CO₂ is the most common reference gas for climate change, GHG emissions are often quantified and reported as CO₂-equivalent (CO₂e) emissions. For example, while methane and nitrous oxide represent smaller fractions of the total annual GHGs emitted worldwide, these gases are more potent than CO₂, with 25 times and 298 times the global warming potential, respectively (CARB, 2016). Therefore, an emission of 1 metric ton of nitrous oxide would be reported as 298 metric tons CO₂e. The principal GHGs resulting from human activity that enter and accumulate in the atmosphere are described below.

Carbon Dioxide

CO₂ is a naturally occurring gas that enters the atmosphere through natural as well as anthropogenic (human) sources. Key anthropogenic sources include the burning of fossil fuels (e.g., oil, natural gas, and coal), solid waste, trees, wood products, and other biomass, as well as industrially relevant chemical reactions such as those associated with manufacturing cement. CO₂ is removed from the atmosphere when it is absorbed by plants as part of the biological carbon cycle.

Methane

Like CO₂, methane is emitted from both natural and anthropogenic sources. Key anthropogenic sources of methane include gaseous emissions from landfills, releases associated with mining and materials extraction industries (in particular coal mining), and fugitive releases associated with the extraction and transport of natural gas and crude oil. Methane emissions also result from livestock and agricultural practices. Small quantities of methane are released during fossil fuel combustion.

Nitrous Oxide

Nitrous oxide is also emitted from both natural and anthropogenic sources. Important anthropogenic sources include industrial activities, agricultural activities (primarily the application of nitrogen fertilizer), the use of explosives, combustion of fossil fuels, and decay of solid waste.

Fluorinated Gases

Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are synthetic gases emitted from a variety of industrial processes, and they contribute substantially more to the greenhouse effect on a pound-for-pound basis than the GHGs described previously. Fluorinated gases are often used as substitutes for ozone-depleting substances (i.e., chlorofluorocarbons, hydrochlorofluorocarbons,

and halons). These gases are typically emitted in small quantities, but because of their potency they are sometimes referred to as *high global warming potential gases*.

Greenhouse Gas Sources

In 2018, the United States emitted about 6.68 billion tons of CO₂e, representing a 2.9 percent increase from 2017. The increase in total GHG emissions between 2017 and 2018 was driven largely by an increase in CO₂ emissions from fossil fuel combustion. CO₂ accounts for approximately 82 percent of GHG emissions. The increase in CO₂ emissions from fossil fuel combustion was a result of multiple factors, including increased energy consumption from greater heating and cooling needs due to a colder winter and hotter summer in 2018 (in comparison to 2017).

Of the five major sectors nationwide (residential and commercial, industry, agriculture, transportation, and electricity), transportation accounts for the highest fraction of GHG emissions (approximately 28 percent), followed closely by the electric power industry (approximately 27 percent) and general industry (approximately 22 percent). Total emissions from the electric power sector have decreased by 3.4 percent since 1990, and the carbon intensity of the electric power sector has decreased by 13 percent during that same time frame. Renewable energy generation (in kilowatt-hours) from solar and wind energy increased from 0.1 percent in 1990 to 8 percent of total electricity generation in 2018, which helped drive the decrease in the carbon intensity of the electricity supply in the U.S. (EPA, 2020).

Table 4.8-1 summarizes statewide emissions of GHG from relevant source categories for 2011 through 2017. Specific contributions from individual air districts, such as the North Coast Unified Air Quality Management District (NCUAQMD), which encompasses the Project area, are included in the emissions inventory but are not itemized by air district. In 2017, California produced 424.1 million gross metric tons of CO₂e emissions. Transportation was the source of 41 percent of the state’s GHG emissions, followed by industrial at 24 percent, electricity generation at 15 percent, commercial and residential sources at 13 percent, and agriculture and forestry comprised the remaining 8 percent (CARB, 2019).

**TABLE 4.8-1
CALIFORNIA GREENHOUSE GAS EMISSIONS (MILLION METRIC TONS CO₂E)**

Emission Inventory Category	2011	2012	2013	2014	2015	2016	2017	
Electricity Generation (in state)	41.26	51.17	49.62	51.79	49.98	42.35	38.57	9.1%
Electricity Generation (imports)	46.95	44.58	40.08	36.84	33.98	26.35	24.00	5.7%
Transportation	166.78	166.24	165.82	167.39	170.91	173.31	174.31	41.1%
Industrial	100.65	101.68	104.48	105.07	102.79	100.04	101.14	23.8%
Commercial	20.73	21.11	21.64	21.37	22.05	23.18	23.26	5.5%
Residential	32.90	30.91	32.07	27.14	27.91	29.30	30.40	7.2%
Agriculture and Forestry	34.34	35.46	33.99	35.06	33.75	33.51	32.42	7.6%
Total Gross Emissions	443.6	451.2	447.7	444.7	441.4	429.0	424.1	100.0%

SOURCE: CARB, 2019.

4.8.2 Regulatory Framework

For a discussion of federal, state and local regulations that are relevant to the Project see Appendix F.

4.8.3 Applicant Proposed Measures

The Project has no Applicant Proposed Measures pertaining to GHG emissions.

4.8.4 Environmental Impacts and Mitigation Measures

Approach to Analysis

Climate change impacts are global, and therefore inherently cumulative in nature; no typical single project would result in emissions of a magnitude that would be significant on a project basis. As such, the assessment of significance in this analysis is based on a determination of whether the GHG emissions from the Project represent a cumulatively considerable contribution to climate change.

The Project would result in GHG emissions from both short-term construction and long-term operations and maintenance activities. CEQA allows significance criteria established by the applicable air pollution control district to be used to assess the impact of a project related to GHG emissions, at the discretion of the CEQA lead agency. NCUAQMD has not adopted a CEQA significance threshold for GHG emissions; however, in the absence of its own threshold, NCUAQMD endorses the use of GHG emissions threshold(s) developed by the Bay Area Air Quality Management District (BAAQMD) (Davis, pers. comm., 2018).

For land use projects with operations that are not stationary sources, BAAQMD's CEQA Guidelines recommend use of an operational significance threshold of 1,100 metric tons CO₂e per year, and for stationary-source projects, the recommended significance threshold is 10,000 metric tons CO₂e per year (BAAQMD, 2017). The Project would include new stationary sources of GHG emissions; however, the associated GHG emissions would be minor at less than 0.1 metric tons CO₂e per year (see response to question a), below). For this reason, the stationary-source significance threshold of 10,000 metric tons CO₂e per year was determined to not be an appropriate threshold to gauge the Project's impact significance.

Therefore, even though the Project is not a typical land use development project, this analysis nonetheless uses the significance threshold of 1,100 metric tons CO₂e per year to evaluate whether the Project's GHG emissions could have a significant impact on the environment. Use of this threshold results in approximately 59 percent of all projects being above the significance threshold and having to implement feasible mitigation measures to meet their CEQA obligations. These projects account for approximately 92 percent of all GHG emissions anticipated to occur up to and including 2020 from new land use development in the Bay Area (BAAQMD, 2017). If all land use-related project emissions are mitigated to below this threshold, it would represent an overall reduction in new land use project-related emissions of up to 92 percent.

This significance threshold was developed to focus on emissions reductions by 2020, and BAAQMD staff and CARB have not yet provided guidance or recommendations for significance thresholds to evaluate consistency with emissions reduction goals for years beyond 2020. However, the

Executive Order B-30-15 emissions reductions goal of lowering GHG emissions to 40 percent below 1990 levels by 2030 is roughly equivalent to reducing emissions by 42 percent below current levels, and the Executive Order S-3-05 emissions reductions goal of lowering GHG emissions to 80 percent below 1990 levels by 2050 is roughly equivalent to reducing emissions by 81 percent below current levels. Therefore, the 1,100 metric tons CO₂e per year threshold can be used as a rough gauge to determine whether the Project would be consistent with these post-2020 goals.

Neither NCUAQMD or BAAQMD staff have identified a specific significance threshold for short-term construction-related GHG emissions. Therefore, GHG emissions from Project construction activities are evaluated based on guidance developed by the San Luis Obispo County Air Pollution Control District (SLOCAPCD). For construction-related GHGs, SLOCAPCD recommends amortizing total emissions from construction over a period equal to the estimated life of the project (in this case, 30 years) and adding those emissions to operational emissions, then comparing the result to the operational significance threshold (SLOCAPCD, 2012).

With regard to NEPA, the analysis of GHG emissions is based on the Mandatory Greenhouse Gas Reporting Rule emissions reporting limit of 25,000 metric tons CO₂e per year (USEPA, 2013), which, if exceeded by the Project's maximum annual construction GHG emissions or the total annual GHG emissions (i.e., the annual operational emissions plus the amortized construction emissions), would have a substantial adverse effect on the environment. In addition, climate change is expected to result in a suite of additional potential changes that could affect the natural environment in a manner that is relevant to the Project. The potential effect of climate change on the Project is discussed qualitatively.

Impact Discussion

- a) **Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment. *Less than Significant; Minor.***

Construction Emissions

As described in greater detail in response to question b) in Section 4.3, *Air Quality*, as part of CPUC's Permit to Construct application process, the Applicant provided calculations of construction-related air pollutant emissions and estimates for the construction activities that would be associated with the Project (Karuk Tribe, 2020: PEA Appendix A). The Applicant's emission calculations and associated assumptions were independently reviewed by CPUC's consultant, Environmental Science Associates (ESA). ESA re-modeled the daily emissions using 264 workdays to represent 12 months of construction, using the same total equipment use hours, but with consideration for the Project's location and construction start date in 2021, using the California Emissions Estimator Model (CalEEMod) Version 2013.3.2. In addition, to more accurately reflect the Project, the daily emissions associated with off-site construction-related vehicle trips were revised to reflect 13 total daily worker and support staff automobile round trips and eight medium- and heavy-duty truck round trips. See the Air Quality and GHG Supplement in Appendix B for the CalEEMod emissions summary and output sheets.

Table 4.8-2 presents the Project's total estimated GHG construction emissions generated by off-road construction equipment and on-road vehicles. Approximately 514 metric tons of CO₂e would be generated during the Project's construction phase.

**TABLE 4.8-2
PROJECT CONSTRUCTION GREENHOUSE GAS EMISSIONS**

Emissions Source	CO₂e (metric tons)
Off-road Construction Equipment	209
On-road Vehicles	305
Total	514

SOURCES: ESA, 2020 (see Appendix B); Karuk Tribe, 2020:Appendix A.

Operation and Maintenance Emissions

The only new stationary source of GHG emissions associated with operation of the Project would be a backup propane generator at the Orick Tower site. The generator size would be approximately 15 horsepower, and it would run 12 minutes a day once a week, for a total of 10.4 hours per year for maintenance purposes. Based on these assumptions, GHG emissions were quantified, and it was determined that routine operation of the proposed backup generator would result in less than 0.1 metric ton CO₂e per year (Karuk Tribe, 2020: PEA Appendix A).

The Project also includes replacement of existing backup generators at each of the three Yurok wireless tower locations; however, the replacement generators would operate similarly to, but more efficiently than, the existing backup generators, which would not result in a net increase in emissions compared to baseline conditions.

Mobile-source GHG emissions would be generated by worker vehicle trips to conduct routine annual visual inspections of system components, electrical switches, and other facilities. Similar to the backup generator emissions, the mobile-source emissions associated with operation of the Project would be negligible, and would be expected to be less than 1 metric ton CO₂e per year. Combined, the stationary- and mobile-source emissions associated with the Project would be approximately 1 metric ton CO₂e per year.

In addition to stationary and mobile sources, operation of the Project would result in indirect GHG emissions from electricity use at the Orleans, Weitchpec, Wautec, and Orick facilities. The Applicant estimates that annual combined electricity use at these facilities would total 12,872 kilowatt-hours per year. CO₂, nitrous oxide, and methane emission factors for electricity use were obtained from The Climate Registry (TCR, 2017) to estimate the indirect GHG emissions that would be associated with the Project's electricity use. The electrical power demand associated with the Project would result in indirect GHG emissions of 3 metric tons of CO₂e each year. See Appendix B for the calculations of indirect GHG emissions.

Total Amortized Annual Emissions

As indicated in Table 4.8-2, total GHG construction emissions associated with the Project would be approximately 514 metric tons CO₂e. These emissions, when amortized over a 30-year period (representing the life of Project operations), equal approximately 17 metric tons CO₂e per year. As presented in **Table 4.8-3**, adding 17 metric tons of CO₂e to the maintenance and operations emissions of approximately 4 metric tons equals a total Project GHG emissions rate of approximately 21 metric tons CO₂e per year, which would be substantially less than the CEQA

significance threshold of 1,100 metric tons CO₂e per year and the federal Mandatory Greenhouse Gas Reporting Rule emissions reporting limit of 25,000 metric tons CO₂e per year for NEPA.

Therefore, the Project would not generate GHG emissions, either directly or indirectly, that would have a significant impact or substantial adverse effect on the environment. The impact would be less than significant and minor.

**TABLE 4.8-3
PROJECT AMORTIZED ANNUAL EMISSIONS**

Emissions Source	CO₂e metric tons/year
Amortized Construction Emissions (30-year period)	17
Maintenance and Operations (stationary and mobile sources)	1
Maintenance and Operations (electricity indirect emissions)	3
Total	21
Significance Threshold	1,100
Significant Impact?	No

SOURCES: ESA, 2018 (see Appendix B); Karuk Tribe, 2020.

Climate Change Impact on the Project

Climate change is expected to result in a suite of environmental changes that could affect the area in which the Project would be located, including longer fire seasons and more severe wildfires, more heavy downpours and flooding, and more intense storms. Longer fire seasons and more severe wildfires could expose the Project to increased risk of damage; however, the fiber optic cable buried underground would be less exposed to wildfire, and cable placed on PG&E power poles would be installed and maintained in accordance with CPUC GO 95 specifications for poles carrying communication cable, which specifies clearance and inspection requirements to reduce the risk of ignition. In addition, the poles would be maintained and operated in accordance with Public Resources Code Section 4292; 14 CCR Section 1254, which requires vegetation to be managed to allow for firebreak clearances around the power poles to reduce potential fire and other safety hazards (see Section 4.30, *Wildfire*). The Project area could also experience an increase in the intensity of high rainfall and flood events, which could result in greater stormwater runoff and flash flooding, and an increase in soil erosion on-site and sedimentation on-site and downstream from the Project alignments and sites. As required by the National Pollution Discharge Elimination System (NPDES) General Permit, Project construction would be undertaken in compliance with a Stormwater Pollution Protection Program (SWPPP). The SWPPP would include specific construction-related Best Management Practices (BMPs) to prevent soil erosion, siltation, and loss of topsoil (see Section 4.10, *Hydrology and Water Quality*). Implementation of the SWPPP would minimize or avoid the degradation of the Project from increased runoff, especially during major storm events.

Mitigation: None required.

b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases. *No Impact; None.*

Construction, operation, and maintenance of the Project would result in increased GHG emissions compared to baseline conditions; however, the emissions would not exceed regional or quantitative thresholds developed to comply with AB 32 and the AB 32 Climate Change Scoping Plan. As discussed in *Approach to Analysis* above, the GHG emissions significance threshold used in the impact analysis under response to question a) goes beyond the AB 32 emissions reduction goal established for 2020. It can be used as a rough gauge to determine whether the Project would be consistent with the Executive Order B-30-15/SB 32 emissions reduction goal of 40 percent below 1990 levels by 2030 and the Executive Order S-3-05 GHG emissions reductions goal of 80 percent below 1990 levels by 2050. Because amortized GHG emissions associated with the Project would not exceed the significance threshold (see Table 4.8-3, above), the Project would not conflict with GHG reduction goals set forth in Executive Order S-3-05, Executive Order B-30-15/SB 32, or AB 32, including the proposed programs identified by CARB in its AB 32 and SB 32 Climate Change Scoping Plans. Therefore, under this criterion, no impact would occur.

4.8.5 NEPA Alternatives

No-Project Alternative

Under the No-Project Alternative, the Project would not be constructed, operated and maintained, or decommissioned and internet services would generally continue as under existing conditions. Therefore, under the No-Project Alternative, no impact associated with GHG emissions would occur.

4.9 Hazards and Hazardous Materials

	Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
9. HAZARDS AND HAZARDOUS MATERIALS—				
Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) 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, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) 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, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g) Expose people or structures either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

This section evaluates the Project’s hazardous materials and public health impacts. Hazards-related impacts addressed in this section include the use of hazardous materials during construction, hazardous materials in soil and groundwater, hazards related to aviation, emergency preparedness, wildfires, and shock hazards. For the purposes of this analysis, the Study Area for the evaluation of hazardous materials was defined as an area comprising all components of the Project, as well as areas that would be subject to either temporary or permanent disturbance as a result of the Project or used for the transportation of materials, equipment, and workers.

4.9.1 Environmental Setting

Materials and waste may be considered hazardous if they are poisonous (toxic); can be ignited by open flame (ignitable); corrode other materials (corrosive); or react violently, explode, or generate vapors when mixed with water (reactive). The term *hazardous material* is defined in California Health and Safety Code Section 25501(n) as any material that, because of quantity, concentration, or physical or chemical characteristics, poses a significant present or potential hazard to human health and safety or to the environment.

In some cases, past industrial or commercial uses on a site can result in spills or leaks of hazardous materials and petroleum products to the environment, thus resulting in soil and groundwater contamination. Federal and state laws require that soils having concentrations of contaminants such as lead, gasoline, or industrial solvents that are higher than certain acceptable levels be handled and disposed as hazardous waste during excavation, transportation, and disposal. California Code of Regulations (CCR) Title 22, Sections 66261.20–66261.24 (22 CCR Sections 66261.20–66261.24) contain technical descriptions of characteristics that would cause soil to be classified as a hazardous waste.

Federal and state laws require that hazardous materials be specially managed. California regulations are compliant with federal regulations and in most cases, are more stringent. Regulations also govern the management of potentially hazardous building materials, such as asbestos-containing materials, lead-based paint, and polychlorinated biphenyls (PCBs) during demolition activities that could potentially disturb existing building materials.

Hazardous Materials Database Records Search

To evaluate the potential presence of hazardous materials in soil and groundwater, a regulatory database search of sites within 1 mile of the Project area was conducted to identify the documented use, storage, generation, and/or releases of hazardous materials and/or petroleum products. In addition, active contaminated sites that are currently undergoing monitoring and remediation were identified. A search of the California Department of Toxic Substances Control (DTSC) EnviroStor and State Water Resources Control Board (SWRCB) GeoTracker databases revealed that there are four known active/open hazardous materials sites within the footprint of any of the Project components (DTSC, 2018a, 2018b; SWRCB, 2018). Two are classified as inactive, while the other two are currently active.

The EnviroStor database includes facilities that are authorized to treat, store, dispose, or transfer hazardous waste and includes the following site types: Federal Superfund sites (National Priority List); state response, including military facilities and State Superfund; voluntary cleanup; and school sites that are being evaluated by DTSC for possible hazardous-materials contamination. The EnviroStor database also contains current and historical information relating to permitted and corrective action facilities. GeoTracker contains regulatory data about leaking underground storage tanks, U.S. Department of Defense sites, spills-leaks-investigations-cleanups, and landfill sites. The GeoTracker database also contains information about public drinking water wells.

DTSC is also responsible for updating the Hazardous Waste and Substances Site List (Cortese List). The list is a planning document used by several agencies and developers to comply with CEQA requirements.

Based on a review of the SWRCB and DTSC hazardous materials databases, there are four sites within 0.25 mile of the proposed location of Project components that indicate a past or present hazardous-materials release or contamination (**Table 4.9-1**).

**TABLE 4.9-1
HAZARDOUS MATERIALS SITES IN THE PROJECT AREA**

Site Name/Address	Distance to Project Alignment	Regulatory List	Description
Segment 1			
Brown, Albert 1221 Red Cap Road Orleans, CA 95556	Approximately 0.5 mile southeast of State Route 96 in Orleans. Approximately 0.5 mile from Segment 1.	North Coast RWQCB	Open— Inactive as of 7/1/2013. A discharge of diesel fuel from an aboveground storage tank threatened a nearby stream and groundwater. No regulatory oversight activities are being conducted by the lead agency.
Segment 4			
CDPR Bull Creek Target Range Bull Creek Road Orick, CA 95555	Adjacent to U.S. Highway 101 in Orick. Approximately 80 feet from Segment 4.	Humboldt County LOP, North Coast RWQCB	Open—Inactive as of 2/19/2009; no regulatory oversight activities are being conducted. The potential contaminants of concern are unknown.
Green Valley EXXON 120784 Highway 101	Adjacent to U.S. Highway 101 in Orick. Approximately 80 feet from Segment 4.	Humboldt County LOP, North Coast RWQCB	Open—Site Assessment as of 9/6/2017. A LUST Cleanup Site. Potential groundwater contamination due to gasoline leakage.
Segment 5			
CDPR Patrick's Point State Park 4150 Patrick's Point Trinidad, CA 95570	Adjacent to U.S. Highway 101 in Trinidad. Approximately 1.2 miles west of Hammond Truck Road	Humboldt County LOP, North Coast RWQCB	Open—Verification Monitoring as of 8/9/2017. Groundwater contamination by benzene, gasoline, toluene, and xylene. Extraction of vapor has been successful, but remediation was shut off prematurely. Agency has ordered that remediation continues.

NOTES: CDPR = California Department of Parks and Recreation; LOP = Local Oversight Program; LUST = leaking underground storage tank; RWQCB = Regional Water Quality Control Board

SOURCES: DTSC, 2018a, 2018b; SWRCB, 2018

Schools and Day Care Centers

Schools and day care centers are considered sensitive receptors that are more at risk from potential adverse effects from the accidental release of hazardous materials because children are more susceptible than adults to these effects. **Table 4.9-2** lists schools that are located within 0.25 mile of the Project alignment.

**TABLE 4.9-2
SCHOOLS WITHIN 0.25 MILE OF THE PROJECT ALIGNMENT**

School	Address
Orleans Elementary School	38016 on State Route 96—Orleans
Orleans Head Start	38016 on State Route 96—Orleans
Orick Elementary School	120918 Highway 101, Orick, CA
The Weitchpec-Yurok Magnet School	565 Weitchpec Road, Orleans, CA
Jack Norton Elementary	263 Jack Norton School Road, Hoopa, CA
Ke'pel Head Start	McKinnon Hill Road off State Route 169, 9.0 miles north of Weitchpec, CA
McKinleyville Middle School	2275 Central Avenue, McKinleyville, CA
McKinleyville Union Elementary	2285 Central Avenue, McKinleyville, CA

SOURCE: Karuk Tribe, 2020

Airports

There is one public airport in the vicinity of the Project alignment: the California Redwood Coast–Humboldt County Airport in McKinleyville, near the end of Segment 5. The Andy McBeth Airport is located approximately 14.0 miles north of Segment 2 on State Route 169. There are no private airstrips in the vicinity of the Project site. Segment 1 is located within 0.4 mile of a private airstrip in Orleans owned by Thomas Aviation (Karuk Tribe, 2020).

Wildfire Hazards

Public Resources Code (PRC) Sections 4201-4204 and Government Code Sections 51175–51189 direct the California Department of Forestry and Fire Protection to generate maps of areas considered to have significant fire hazards based on a variety of criteria. These mapped areas are designated as Fire Hazard Severity Zones (FHSZ). The Project alignment would be located in FHSZs ranging from moderate to very high, with the inland segments (Segments 1, 2, and 3) proposed in the more severe zone (**Figure 4.9-1**). Portions of these segments are proposed within areas designated as Federal Responsibility Areas, which means that the State of California is not financially responsible for wildland fire protection; as this responsibility falls on the federal government (CAL FIRE, 2007).

4.9.2 Regulatory Framework

For a discussion of federal, state and local regulations that are relevant to the Project see Appendix F.

4.9.3 Applicant Proposed Measures

The following Applicant Proposed Measures (APMs) related to hazards and hazardous materials have been included as part of the Project:

- **APM HAZ-1:** The Applicant shall prepare a Hazardous Materials Management Plan (HMMP) for approval by the CPUC (via an appropriate agency/jurisdiction such as Humboldt County). The HMMP shall be prepared and submitted at least 30 days prior to the start of construction. The HMMP shall include, but not be limited to, the following requirements:
 1. The Applicant's Construction Contractor shall prepare a Hazardous Substance Control and Emergency Response Plan (Plan) and implement it during construction to ensure compliance with all applicable federal, state, and local laws and guidelines regarding the handling of hazardous materials. If the Project would result in the storage or handling of a Threshold Quantity or greater of a hazardous substance as defined by the California Hazardous Materials Release Response Plan and Inventory Law, the Plan shall include preparation and implementation of a Hazardous Materials Business Plan that describes the hazardous materials usage, storage, and disposal to the appropriate Certified Unified Program Agency. The Plan shall prescribe hazardous material handling procedures to reduce the potential for a spill during construction, or exposure of the workers or public to hazardous materials. The Plan shall also include appropriate response actions in the event that hazardous materials are released or encountered during excavation activities. The Plan shall be submitted to the CPUC for review and approval prior to the

- commencement of construction activities. The Plan shall require that the Applicant and/or its contractors shall implement construction best management practices including but not limited to the following:
- a. Follow manufacturer's recommendations on use, storage, and disposal of chemical products used in construction.
 - b. Avoid overtopping construction equipment fuel gas tanks.
 - c. Use tarps and oil-absorbent pads under vehicles when refueling to contain and capture any spilled fuel.
 - d. During routine maintenance of construction equipment, properly contain and remove grease and oils.
 - e. Properly dispose of discarded containers of fuels and other chemicals.
- **APM FIRE-1:** Before the start of construction, the Applicant's Construction Contractor will prepare a project-specific Construction Fire Prevention Plan (CFPP) to ensure the health and safety of construction workers and the public from fire-related hazards. Local fire departments shall be consulted during plan preparation and the CFPP will include fire safety measures as recommended by these departments. The CFPP shall list fire prevention and extinguishment procedures and specific emergency response and evacuation measures that would be followed during emergency situations. The CFPP also would provide smoking and fire-related rules, storage, and parking areas, require usage of spark arrestors on construction equipment, and fire-suppression tools and equipment. The CFPP shall include, but not be limited to, the following:
 1. Water tanks, water trucks, or portable water backpacks (where space or access for a water truck or water tank is limited) will be sited/available in the Project area for fire protection where fire hydrants are not available.
 2. All construction vehicles shall have fire suppression equipment.
 3. All construction workers shall receive training on the proper use of fire-fighting equipment and procedures to be followed in the event of a fire.
 4. As construction may occur simultaneously at several locations, each construction site shall be equipped with fire extinguishers and fire-fighting equipment sufficient to extinguish small fires.
 5. Construction personnel shall be required to park vehicles away from dry vegetation.
 6. Prior to construction, contact and coordinate with the appropriate fire departments to determine the appropriate amounts of fire equipment to be carried on the vehicles and appropriate locations for the water tanks, water trucks, and/or water backpacks. The Applicant shall submit verification of its consultation with the appropriate fire departments to the CPUC.
 7. The CFPP shall be submitted to CPUC staff for approval prior to commencement of construction activities and shall be distributed to all construction crew members prior to construction of the Project.
 8. Cease work during Red Flag Warning events in areas where vegetation would be susceptible to accidental ignition by Project activities (such as welding or use of

equipment that could create a spark). During Red Flag Warning events all non-emergency construction and maintenance activities will cease in affected areas.

- **APM TRANS-1:** Traffic control measures such as traffic control personnel, warning signs, lights, and barriers will be used during construction as specified in the encroachment permits from road managers to ensure safety and to minimize traffic congestion.

4.9.4 Environmental Impacts and Mitigation Measures

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials. *Less than Significant; Short-term; Localized; Moderate.*

Project construction would require the use of limited quantities of common hazardous substances, such as gasoline, diesel fuel, oils and lubricants, hydraulic fluid, and solvents to maintain vehicles and motorized equipment. As noted in Section 2.6, the Project would use horizontal directional drilling during construction to minimize impacts on sensitive biological and cultural resources. The Project would not require operational use, storage, treatment, disposal, or transportation of significant quantities of hazardous materials.

The use of hazardous materials and substances during construction would be subject to the federal, state, and local health and safety requirements for the handling, storage, transportation, and disposal of hazardous materials. Implementation of a storm water pollution prevention plan (SWPPP) would reduce the chance of a spill/accidental release and would have provisions to contain spills to avoid contamination of water bodies and groundwater. Measures that would be implemented as part of the SWPPP could include physical barriers to prevent erosion and sedimentation (site boundary protection), dewatering procedures, use of swales, protection of stockpiled materials and demolition waste management, limitations on timing of work (e.g., seasonal restrictions or a prohibition of work during storm events), and a variety of other measures that would substantially reduce or prevent erosion and runoff from occurring during construction. For further information regarding the SWPPP, see Section 4.10.

APM HAZ-1 requires preparation of a hazardous substance control and emergency response plan. It includes performance standards, which when adhered to, would mean that potential hazardous materials-related impacts during construction would be less than significant and minor.

Assuming compliance with applicable federal, state, and local regulations and compliance with the SWPPP and applicable BMPs, implementing the HMMP as described in APM HAZ-1 would reduce the impact to a less than significant and moderate level.

During the operation and maintenance phase, there would be limited or no routine transport, use, or disposal of hazardous materials associated with the Project. Fiber optic cables may require occasional maintenance and repair, which would be conducted by a licensed contractor that would be required to comply with all applicable regulations pertaining to the use, transport, and disposal of hazardous materials. Impacts associated with operation of the Project would be less than significant and moderate.

Mitigation: None required.

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment. *Less than Significant; Short-term; Localized; Moderate.*

Accidents or mechanical failure involving heavy equipment could result in the accidental release of small quantities of fuel, lubricants, hydraulic fluid, or other hazardous substances. These types of spills on construction sites are typically in small quantities and localized, and because of regulatory controls are cleaned up in a timely manner. The construction contractor would be responsible for the handling and use of hazardous materials and would be required to properly store and dispose of these materials in compliance with federal and state laws. As discussed in Section 4.10, the Project would require the implementation of a SWPPP, which outlines BMPs to avoid runoff of stormwater and pollutants. The BMPs would include protection measures to contain a potential release and prevent any such release from reaching an adjacent waterway or stormwater collection system. These would minimize the potential adverse effects on groundwater and soils.

Project construction activities would involve excavating, trenching, drilling and grading, as well as the use of hazardous materials such as gasoline, diesel fuel, oils, lubricants, solvents, and glues. If hazardous materials were present in excavated soil or were inadvertently released into the environment, this could expose people to contaminated soil and groundwater and chemical vapors during construction.

Given compliance with applicable federal, state, and local regulations and implementation of applicable BMPs, implementing **APM HAZ-1** would reduce the impact to a less than significant and minor level during Project construction, operation, and maintenance.

Mitigation: None required.

c) Produce hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within 0.25 mile of an existing or proposed school. *Less than Significant; Localized; Short-term; Moderate.*

As shown in Table 4.9-2, there are eight schools (in the communities of McKinleyville, Orleans, Orick, Hoopa, and Weitchpec) that are located with 0.25 mile of the proposed location of several Project components. No new schools are currently proposed in the area. As described in response to question a), construction would require the short-term use of various hazardous materials. However, implementation of APM HAZ-1 would reduce any risks associated with the use of hazardous materials such that the risk of increased exposure to hazardous materials at nearby schools would be extremely unlikely and the impact would be less than significant and moderate.

Mitigation: None required.

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code §65962.5 and, as a result, would create a significant hazard to the public or the environment. *No Impact; None.*

None of the Project components would be located on a site that is included on a list of hazardous materials sites (Table 4.9-1). There two closest hazardous materials sites to any of the locations of proposed Project components are leaking underground storage tanks cleanup site in Orick (80 feet

from Segment 4) and a site of possible groundwater contamination adjacent to U.S. Highway 101 in Trinidad (1.2 miles from Segment 5). Project construction near these sites would not create a hazard that would expose the public or the environment to hazardous materials. Therefore, under this criterion, no impact would occur.

Mitigation: None required.

- e) For a project located within an airport land use plan or, where such a plan has not been adopted, within 2 miles of a public airport or public use airport, result in a safety hazard for people residing or working in the project area. *No Impact; None.***

The California Redwood Coast–Humboldt County Airport (Arcata-Eureka Airport), located in northern McKinleyville, is the only public airport within 2 miles of any of the proposed locations of Project components. Segment 5 is the closest Project segment to this facility. A small portion of Segment 5 would be located within Zone C, which is identified as a zone of “limited risk” in the Humboldt County Airport Land Use Compatibility Plan (Humboldt County, 2017b). Co-location of telecommunications cables on existing utility poles is not a prohibited use in Zone C or one restricted by the Airport/Land Use Safety Criteria provided in the McKinleyville Community Plan (Humboldt County, 2002). Project construction, operation, and maintenance would not result in a safety hazard for people residing or working in the Study Area. Therefore, under this criterion, no impact would occur.

Mitigation: None required.

- f) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan. *No Impact; None, Potentially Beneficial.***

The Emergency Operations Plan for Humboldt County does not include any specific evacuation routes, as these are generally identified and coordinated by local law enforcement and emergency service responders during specific incidents. The construction of each segment alignment and the Orick Tower would occur on or near major arterial roads and highways in Humboldt County, and each segment has a portion of the alignment that is near a fire station (Humboldt County, 2018). Project construction may require temporary road closures and could affect traffic in these areas by adding congestion to the roads or reducing the capacity of a given roadway. APMs TRANS-1 includes implementation of traffic control measures that would be used during construction to ensure safety, minimize congestion, and maintain emergency vehicle access.

Project operation and maintenance would not affect an adopted emergency response or evacuation plan. However, it is worth noting that emergency response is anticipated to improve with implementation of the Project because various emergency responders and anchor institutions (such as CAL FIRE) would be served by the broadband infrastructure provided by the Project. Communication during an emergency requiring response or evacuation would benefit as a result of Project implementation. Thus, under this criterion, no adverse impact would occur.

Mitigation: None required.

g) Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires. *Less than Significant; Moderate.*

The Project alignment would be located in an area that has fire hazard severity ranging from moderate to very high, according to the Humboldt County General Plan and the Fire Hazard Severity Zones map provided by CAL FIRE (Humboldt County, 2017c; CAL FIRE, 2007). The greatest level of fire hazard severity is the zone within Six Rivers National Forest, which is designated “very high.” This “very high” FHSZ encompasses portions of Segments 1, 2, and 3, which correspond to the town of Orleans, State Route 169 up to Wautec, and along Bald Hills Road, respectively. Segment 4 is within a high severity zone and Segment 5 is within intermixed moderate to high FHSZs (see Figure 4.9-1).

Fire hazards could arise during construction as a result of the use of vehicles, equipment, and flammable substances such as fuel and oils. This could potentially contribute to a wildland fire. **APM FIRE-1** requires the preparation of a fire plan that includes requirements for prevention, control, and extinguishment of fires. Implementing a fire plan would reduce impacts related to exposure of people or structures to a significant risk of loss, injury, or death involving wildland fires. In addition, APM FIRE-1 establishes sufficient performance standards to ensure that the risk would be adequately minimized. With the implementation of APM FIRE-1 impacts would be less than significant and moderate.

Mitigation: None required.

4.9.5 NEPA Alternatives

No-Project Alternative

Under the No-Project Alternative, the Project would not be constructed, operated and maintained, or decommissioned and internet services would generally continue as under existing conditions. Therefore, under the No-Project Alternative, no adverse impact pertaining to the release of Project hazards or hazardous materials. However, under a No-Project Alternative, there would be no potentially beneficial effect of increased communication and emergency response for the anchor institutions, as the Project’s fiber optic system would not be implemented.

4.10 Hydrology and Water Quality

	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
10. HYDROLOGY AND WATER QUALITY—				
Would the Project:				
a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
i) result in substantial erosion or siltation on- or off-site;				
ii) substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;				
iii) create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or				
iv.) impede or redirect flood flows?				
d) In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

This section discusses the potential impacts on hydrology and water quality that could result from construction, operation, and maintenance of the Project. Information presented in this section was compiled based on a site visit to the Project area and review of information from the Proponent’s Environmental Assessment (Karuk Tribe, 2020), resource agency websites and databases, and Geographic Information System data. For purposes of the evaluation of hydrology and water quality, the Study Area was defined as the footprint of all Project components, including all areas of temporary and/or permanent ground disturbance, as well as watersheds, water features, and drainages potentially influenced by the Project.

4.10.1 Environmental Setting

Regional Setting and Climate

The Project would be located in the Klamath Mountains of Northern California’s Coast Range Province, an area characterized by rugged, rural terrain with coastal prairies and redwood forests ranging in elevation from approximately 25 feet above mean sea level (amsl) to 3,130 feet amsl.

The region receives an average annual precipitation of 51 inches (in Orleans) and 67 inches (in Orick), falling primarily between October and May (WRCC, 2018). The regional climate, as influenced by the Pacific Ocean on the north coast of California, is characterized by cool to mild summers and cold, wet winters. The Project would be constructed in the Lower Klamath River Basin in an alignment that would cross through the Lower Klamath River, Redwood Creek, Trinidad, and Mad River watersheds, with last-mile facilities minimally crossing into the Lower Trinity watershed (**Figure 4.10-1**).

Surface Water Hydrology

Humboldt County is part of the State Water Resources Control Board's (SWRCB's) Klamath North Coast Hydrologic Basin (Region 1), which includes all of the basins draining into the Pacific Ocean from the Oregon border south through the Russian River Basin. The Lower Klamath River watershed encompasses the portion of the Klamath River and its tributaries, extending from the Scott River to the Pacific Ocean in a 2,564-square-mile area (1,640,960 acres) (NCRWQCB, 2005). The Redwood Creek watershed drains an area of approximately 22,000 acres extending from the south fork of the Trinity River northwest to the Pacific Ocean through the town of Orick (Humboldt County, 2016a). The Mad River watershed consists of a mix of private and U.S. Forest Service coastal timberland that drains an area of 500 square miles into Humboldt Bay near the town of McKinleyville. The Trinidad watershed drains an area of 34,000 acres through coastal drainages to the western extent of the Project near Big Lagoon. Additional details of specific water crossings by Project segment are provided below (see also Figure 4.10-1).

Segment 1: Segment 1 includes 15.2 miles of the Project's fiber optic cable route that would be installed in a north-to-southwest alignment along State Route 96 from Orleans to Weitchpec, roughly parallel to the lower Klamath River. The alignment would cross multiple tributaries of the Klamath River—Camp Creek, Crawford Creek, Ullathorne, Slate, Bluff, Aikens, Joe Marine, Cacanough, and Santa Rosa Creeks—and several other unnamed streams.

Segment 2: This segment would include an overhead crossing of the Klamath River and construction along State Route 169. Overhead installations on existing poles would cross multiple tributaries of the Klamath River: Muddy, Weitchpec, Ben's, Burrill, Rube Ranch, Miners, Coon, Mawah, Mureep, Devil and Cappell Creeks.

Segment 3: This portion of the Project would not include any water crossings.

Segment 4: Segment 4 would include a bridge hang to facilitate crossing of a tributary of Redwood Creek; then cables would transition to overhead placement as the segment would cross Redwood Creek (overhead) using existing poles along U.S. Highway 101, north of the town of Orick.

Segment 5: This segment would be predominantly overhead on existing poles and would include an overhead crossing of a second tributary of Redwood Creek south of Orick. A 3.5-mile portion of Segment 5 would be installed underground in the existing roadway of Murray Road, which crosses Norton Creek (a tributary of Mad River) at Central Avenue in McKinleyville.

Surface Water Quality

The region's water quality is greatly influenced by historic and current land uses, such as logging in the Lower Klamath, Redwood Creek, Mad River and Trinidad watersheds (Figure 4.10-1). Several streams in the Study Area are listed on the U.S. Environmental Protection Agency's (EPA's) 303(d) list¹ (or are addressed through a TMDL²) as impaired for various pollutants including sediment, siltation, and temperature, among others. Sources for the water quality impairments include agriculture, logging, and road construction. Further discussion regarding water quality is provided in Section 4.10.2.

Groundwater

Humboldt County is in the North Coast Hydrologic Area, the western portion of which is defined as part of the California Coastal Basin Aquifer. The hydrologic basins in Humboldt County generally provide very large volumes of surface water, relative to groundwater yield (Humboldt County, 2016a). The Project would be located predominantly in the Mad-Redwood Groundwater Basin. Average depth to groundwater in this basin ranges from 15 feet (measured in Orick) to 27 feet (measured in a well located south of Big Lagoon) (DWR, 2018a). There are no adjudicated medium- or high-priority³ groundwater basins in the Study Area, as defined by the California Department of Water Resources (DWR), per the Sustainable Groundwater Management Act (DWR, 2018b). Groundwater is drawn for local uses and exported from the Mad-Redwood basin for municipal uses in other parts of Humboldt County.

Flooding

The Federal Emergency Management Agency (FEMA) identifies special flood hazard areas on the flood insurance rate map, defined as an area that will be inundated by the flood event having a 1-percent chance of being equaled or exceeded in any given year. The 1-percent-annual-chance flood is also commonly referred to as the *base flood* or *100-year flood* (FEMA, 2017).

The majority of the Study Area is located in areas that have not been mapped or designated by FEMA; however, portions of proposed Segment 4 would be installed in a zone mapped by FEMA as a "special flood hazard area with low flood risk" (Zone A). Construction for this segment would be primarily underground, although a bridge hang would be undertaken at Redwood Creek. The proposed site for the Orick Tower, on agricultural land south of U.S. Highway 101, would be in an area mapped by FEMA as being within an area of minimal flood hazard (Figure 4.10-1).

Dam Inundation Zones

Humboldt County has an adopted dam failure contingency plan as part of its overall emergency response planning. Portions of Humboldt County could be affected by failures related to one or

-
- ¹ Under Section 303(d) of the Clean Water Act, states are required to identify water bodies or reaches of streams that are impaired (i.e., do not meet one or more of the water quality standards established by the state).
 - ² *Total maximum daily load*, or TMDL, is the maximum amount of a pollutant/stressor that a water body can assimilate and still meet the water quality standards.
 - ³ Under the Sustainable Groundwater Management Act, over drafted basins are monitored through locally implemented groundwater sustainability plans.

more of six dams, all located outside of Humboldt County. Lewiston and Trinity Dams, located near Weaverville on the Trinity River upstream of the Klamath River, and Copco and Irons Gate Dams, located in Siskiyou County (on the Klamath River), have been identified as dams that could inundate communities in the Study Area in the event of catastrophic failures (Humboldt County, 2016b).

Tsunami and Seiche Hazard Zones

Tsunami waves are large ocean waves generated by earthquakes, volcanic eruption, or coastal landslides. For tsunamis generated by undersea earthquakes, the amplitude of the tsunami is determined by the amount of sea-floor displacement. Similarly, the wavelength and period of the tsunami are determined by the size and shape of the underwater disturbance. The majority of tsunamis (80 percent) occur within the Pacific Ocean's Ring of Fire, a geologically active area where tectonic shifts coincide with volcanic activity and earthquakes (National Geographic Society, 2018). Approximately 1.3 miles of the Project's Segment 4, 2.2 miles of Segment 5, and the proposed Orick Tower would be located in an identified tsunami inundation zone (California Department of Conservation, 2018).

Similar in cause to a tsunami, a *seiche* is a standing wave that occurs on rivers, reservoirs, ponds, and lakes when seismic waves from an earthquake pass through the area. Big Lagoon is an example of a water body within the Study Area that could be subject to seiches.

4.10.2 Regulatory Framework

For a discussion of federal, state, and local regulations that are relevant to the Project see Appendix F.

4.10.3 Applicant Proposed Measures

In addition to the selection of routes intended to avoid and minimize the Project's environmental impacts, the following Applicant Proposed Measures (APMs) related to hydrology and water quality have been included as part of the Project (Karuk Tribe, 2020).

- **APM AIR-1:** Fugitive dust produced during construction will be controlled with watering as needed. Watering will only settle dust and will not create runoff.
- **APM GEN-5:** Directional drilling will be used where needed and approved to avoid impacts to water, biological, and cultural resources.
- **APM HAZ-1:** The Applicant shall prepare a Hazardous Materials Management Plan (HMMP) for approval by the CPUC. The HMMP shall be prepared and submitted at least 30 days prior to the start of construction. The HMMP shall include, but not be limited to, the following requirements:
 1. The Applicant's Construction Contractor shall prepare a Hazardous Substance Control and Emergency Response Plan (Plan) and implement it during construction to ensure compliance with all applicable federal, state, and local laws and guidelines regarding the handling of hazardous materials. If the Project would result in the storage or handling of a Threshold Quantity or greater of a hazardous substance as defined by the California Hazardous Materials Release Response Plan and Inventory Law, the Plan shall include preparation and implementation of a Hazardous Materials Business Plan that describes

- the hazardous materials usage, storage, and disposal to the appropriate Certified Unified Program Agency. The Plan shall prescribe hazardous material handling procedures to reduce the potential for a spill during construction, or exposure of the workers or public to hazardous materials. The Plan shall also include appropriate response actions in the event that hazardous materials are released or encountered during excavation activities. The Plan shall be submitted to the CPUC for review and approval prior to the commencement of construction activities. The Plan shall require that the Applicant and/or its contractors shall implement construction best management practices including but not limited to the following:
- a. Follow manufacturer's recommendations on use, storage, and disposal of chemical products used in construction.
 - b. Avoid overtopping construction equipment fuel gas tanks.
 - c. Use tarps and oil-absorbent pads under vehicles when refueling to contain and capture any spilled fuel.
 - d. During routine maintenance of construction equipment, properly contain and remove grease and oils.
 - e. Properly dispose of discarded containers of fuels and other chemicals.
- **APM REC-1: Final Cleanup:** Final cleanup will ensure that all construction areas are free of any construction debris including, but not limited to: assembly scrap metals, oil or other petroleum-based liquids, construction wood debris, and worker-generated litter. Permanent erosion control devices will be left in place.
 - **APM SOIL-1:** Disturbance of soils and vegetation removal will be limited to the minimum area necessary for access and construction.
 - **APM WATER-2:** Construction industry standard practices and BMPs will be used for spill prevention and containment.
 - **APM WET-1:** Wetland delineations will be performed prior to construction to support CWA Section 404 permitting and to minimize Project impacts. The delineation will identify both wetland and non-wetland waters of the United States that would be affected by the Project. The delineation will also provide sufficient information to support California permitting and will include delineation of wetland and non-wetland waters of the State of California.
 - **APM WET-2:** Where impacts on wetlands are not avoidable, site-specific crossing plans and measures to mitigate impacts will be submitted to the appropriate regulatory agency, as well as the land managing agency. The Karuk Tribe will obtain all necessary permits prior to discharging dredged or fill material to the waters of the United States or state.
 - **APM WET-3:** If trench dewatering is needed, it will be completed per the CalTrans BMP NS-2 specifications and Field Guide to Construction Site Dewatering.

4.10.4 Environmental Impacts and Mitigation Measures

a) Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality. *Less than Significant; Short-term; Localized; Moderate.*

Construction of the Project would involve ground-disturbing activities such as trenching and pavement cutting, potentially leading to erosion and siltation in runoff, which could adversely affect water quality in the Study Area. Water used for dust control during construction could also contribute to runoff and erosion. In addition to potential erosion and siltation impacts, runoff pollution could occur as a result of the use, storage, transport, and/or disposal of potentially hazardous materials (such as fuels, oils, or equipment lubricants) that could spill, leak, or otherwise be transported to surface waters after an accidental release during construction activities.

Project construction would not be undertaken within any waterways; however as noted in Chapter 2, some portions of the Project would require installation methods involving directional drilling below culverts in order to avoid impacts to biological and cultural resources (no directional drilling would occur under perennial streams). In the absence of measures to prevent contamination, frac-out⁴ associated with directional drilling could result in water quality impacts. Installations such as bridge hangs within conduit, and overhead installations at stream and river crossings could also affect waterways during construction.

As required by the National Pollution Discharge Elimination System (NPDES) General Permit, Project construction would be undertaken in compliance with a Stormwater Pollution Protection Program (SWPPP). The SWPPP would include specific construction-related Best Management Practices (BMPs) to prevent soil erosion, siltation, and loss of topsoil. BMPs implemented could include, but would not be limited to, physical barriers such as straw bales and silt fences to prevent erosion and siltation; limitations on work periods during storm events; protection of stockpiled materials; and a variety of other measures that would substantially reduce or prevent erosion and associated siltation from occurring during construction. Post-construction requirements necessitate the restoration of construction sites to pre-project hydrological conditions to ensure that the physical and biological integrity of aquatic ecosystems would be sustained in their existing condition. Per APM SOIL-1, disturbance of soils and vegetation removal would be limited to the minimum area necessary for access and construction. Implementing APM SOIL-1 and adhering to the measures outlined in the SWPPP would reduce potential construction-related adverse effects on water quality.

To reduce the potential for runoff that could otherwise impact waterways, the project includes design measures to reduce impacts. To limit impacts on waterways, new poles would be installed a minimum of 100 feet from the high-water mark to facilitate crossing at the Klamath River at Orleans (Segment 1) and a minimum of 200 feet from the high-water mark to cross at Martin's Ferry (Segment 2). New poles would also be installed a minimum of 100 feet from the high-water mark for the overhead crossing of Redwood Creek in Orick (Segment 4). With respect to

⁴ A "frac-out" occurs when drilling fluid inadvertently penetrates fractured bedrock, or seeps or flows into the rock and sand that surrounds the bedrock and travels toward the Earth's surface.

installation on existing bridges, conduits would be installed or used on the underside of bridges to facilitate placement of the cables with no resultant impact on waterways.

Along with these waterway avoidance measures, as noted above, impacts on water quality associated with construction near, under, or over waterways would be reduced through adherence to measures outlined in the SWPPP and further reduced through implementation of APM HAZ-1 (see Section 4.9), which contains detailed measures to limit contamination of waterways. As described in Chapter 2, the Project may also involve dewatering activities during trenching. However, should dewatering be required, per APM WET-2, this work would be completed per the Caltrans BMP NS-2 specifications and the *Field Guide to Construction Site Dewatering*.

With respect to Project operation and maintenance, per APM REC-1, all construction areas would be cleared after construction to ensure that all construction debris is removed. Any permanent erosion control measures required by the SWPPP would remain in place, reducing the risk of future erosion and siltation. Maintenance of the subsurface fiber optic cables could include minor ground disturbances to access cables primarily through vault boxes, which would be installed level with the ground. Maintenance of lines could also involve repairs to guy wires or anchors, which could also include minor soil disturbances. The remaining Project elements, once constructed, would not include soil disturbance.

Once constructed, the Project would require only a very limited amount of temporary ground disturbance during annual maintenance activities and for occasional pole replacement or cable repair. With implementation of APM HAZ-1 construction, operation, and maintenance of the Project would not lead to substantial degradation of surface water or groundwater quality. Impacts (primarily associated with construction) would be temporary, less than significant, and moderate.

Mitigation: None required.

b) Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin. Less than Significant; Short-term; Localized; Minor.

The Project would not be located in a medium- or high-priority or adjudicated groundwater basin. The total anticipated water demand for the Project (e.g., for trenching, directional drilling and dust control) would be approximately 275,000 gallons over the course of the 19 months of construction. Although the exact source of water use for the Project is not yet known, it is anticipated that the majority of water used for construction activities would be purchased from a local municipal purveyor (Karuk Tribe, 2020). Minor amounts of groundwater could be used, but this would not be expected to have any notable effect on groundwater supplies. Once constructed, the Project is not anticipated to require the use of water; negligible amounts, if needed during maintenance activities would be purchased from municipal sources.

Impervious surfaces constructed for the Project would consist only of the concrete foundations required to support the Orick Tower (one approximately 15-foot-diameter concrete pad, one small concrete foundation for the associated hut encompassing less than 0.5 acre of total disturbance),

one (8-foot by 8-foot) concrete foundation for the Antenna Ridge tower, and small areas associated with the installation of new poles and vault splice boxes.

Because construction and operation of the Project would not require a substantial quantity of groundwater or create a substantial amount of new impervious surface area, this impact would be less than significant and minor.

Mitigation: None required.

c) i) Substantially alter the existing drainage pattern of a site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site. *Less than Significant; Short-term; Localized; Minor.*

No alterations to the courses of streams or rivers are proposed as part of the Project. Potential impacts associated with wetlands are discussed in Section 4.4. Construction of the Project would involve ground-disturbing activities such as trenching for subsurface installation of fiber optic cable segments and at anchor points for the Project's interconnection; however, this construction activity would not require substantial areas of grading or result in the creation of substantial areas of impervious surfaces such that the Project would affect existing drainage patterns. Trenching would take place mostly within existing roadways.

As described in response to question a), a SWPPP would be implemented during construction, which would minimize the potential for erosion and siltation and greatly reduce the rate and volume of runoff. Project construction would not be undertaken within any waterways; however, as described in response to question a), some portions of the Project would require installation methods including directional drilling below culverts, bridge hangs, and overhead installations at stream and river crossings, which could involve minor impacts on waterways. These installations would not alter the course of a stream or a river and would not alter drainage patterns, nor would they generate substantial sources of additional runoff. This construction impact would be less than significant and minor.

During operation and maintenance, the Project would not generate any substantial sources of runoff or sedimentation and would not affect drainage patterns. This operational impact would be less than significant and minor.

Mitigation: None required.

c) ii) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site. *Less than Significant; Short-term; Localized; Minor.*

No alterations to the course of any stream or river are proposed as part of the Project. As described above in responses to questions a) and b), the Project would not have any significant effects on the rate or amount of surface runoff. Because the Project would add a minimal amount of impervious surface for foundations (for the Orick Tower and communication facilities), minor changes to drainage patterns would occur in the Project's operation and maintenance phase.

However, these site alterations would not result in capacity exceedances or flooding on- or off-site. This impact would be less than significant and minor.

Mitigation: None required.

c) iii) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. *Less than Significant; Short-term; Localized; Minor.*

As described previously, with implementation of a SWPPP, the Project would not create substantial new sources of runoff. Through implementation of avoidance measures, impact minimization, APMs, BMPs, and all requirements stipulated in an agency-approved SWPPP, such sources would be intercepted and prevented from entering drainage systems or surface waters. Impacts would be less than significant and minor.

Operation and maintenance of the Project would not create substantial sources of runoff that could exceed the capacity of existing or planned stormwater drainage systems. Impacts related to runoff during Project operation and maintenance would be less than significant and minor.

Mitigation: None required.

c) iv) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would impede or redirect flood flows. *Less than Significant; Minor.*

As discussed previously, runoff associated with construction of the Project would be controlled through implementation of a SWPPP and associated BMPs. The Project has been designed to minimize impacts on waterways and is not proposed on lands subject to flooding. After construction, the presence of the Project's proposed components would not include any structural elements that would impede or redirect flood flows. This impact would be less than significant and minor.

Mitigation: None required.

d) Be located within a flood hazard, tsunami, or seiche zone, or risk release of pollutants due to project inundation. *No Impact; None.*

The Project includes several components (the Orick Tower and small portions of Segments 4 and 5 of the fiber optic route) that would be installed within a tsunami inundation zone (California Department of Conservation, 2018). However, the foundation of the Orick Tower would be reinforced and self-contained such that there would be a negligible risk for release of pollutants. The portions of Segment 5 within a tsunami inundation zone and near Big Lagoon within a seiche hazard zone would be installed in an overhead position upon existing structures (Pacific Gas and Electric Company power poles), which would not increase the risk for release of pollutants.

Portions of the Project, including two new poles, that would cross Redwood Creek within Segment 4 and a small portion of Segment 5 would be placed in an area mapped by FEMA as "Zone A," or special (100-year) flood hazard area (Figure 4.10-1). Although much of the Project

area has not been mapped for flood zones, the Project is designed such that segments would be overhead (above) or installed within conduits, and thus would not be affected by these flood hazards; therefore, the risk for release of pollutants would be negligible. The remaining Project components would not be installed in a flood hazard area. Therefore, under this criterion, no impact would occur.

Mitigation: None required.

e) Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. *Less than Significant; Minor.*

As discussed in response to question a), the Project would be constructed under the requirements of a Construction General Permit, which would include a SWPPP and BMPs to reduce incidents of runoff and arrest erosion, while also limiting sedimentation and siltation of waterways. Thus, the Project would not conflict with implementation of the Basin Plan, the effective water quality control planning document for the North Coast Region.

The Project may use groundwater resources for dust control and other construction purposes, as described in Section 2.6.10. However, this water would not be drawn from a groundwater basin identified by DWR as one of medium or high priority, nor would these resources come from a groundwater basin identified as one in critical conditions of overdraft. The Project is not located in a region with an effective sustainable groundwater management plan. However, because the Project would not place significant demands on groundwater resources during construction and would not require ongoing groundwater during operation and maintenance, the Project would not conflict with the sustainable management of groundwater resources. This impact would be less than significant and minor.

Mitigation: None required.

4.10.5 NEPA Alternatives

No-Project Alternative

Under the No-Project Alternative, the Project would not be constructed, operated, and maintained, and internet services would generally continue as under existing conditions. The No-Project Alternative consists of no ground-disturbing activities. Therefore, under the No-Project Alternative, no impact on hydrology and water quality would occur.

4.11 Land Use and Planning

	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
11. LAND USE AND LAND USE PLANNING —				
Would the project:				
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

This section evaluates the potential for Project construction, operation, and maintenance to result in impacts related to land use and planning in the Study Area. For purposes of the evaluation of potential land use impacts, the Study Area was defined as the footprint of all Project components, including all areas of temporary and/or permanent ground disturbance and the surrounding land uses within which the Project would be constructed and operated, as described below.

4.11.1 Environmental Setting

The Project would be located in remote portions of northern Humboldt County. Land use in the Project area is predominantly undeveloped forested land, tribal reserves, and rural residential lands. The largest portions of forested land located in the Project area are under both federal and state management. Redwood National Park (RNP), managed by the National Park Service (NPS), and Six Rivers National Forest (SRNF), managed by the U.S. Forest Service (USFS), are two of the largest and best-known forest areas that would be crossed by the Project alignment. The U.S. Bureau of Land Management (BLM) also owns two reserves in the Project area. Other portions of forested land in the Project Area are privately owned and managed as active timberland by Green Diamond Resource Company (GDR) (Figures 2-2 through 2-9).

Table 4.11-1 summarizes existing land use, designations, and zoning for the Project. For the purpose of this analysis, the Study Area is defined as the Project route, including all work areas, staging yards, access roads, and Project components.

4.11.2 Regulatory Framework

For a discussion of federal, state and local regulations that are relevant to the Project see Appendix F.

**TABLE 4.11-1
 HUMBOLDT COUNTY LAND USE DESIGNATIONS AND ZONING OF PROJECT COMPONENTS**

Project Component	Land Use Designation	Zoning Designation	Approximate Distance/Area
Segment 1	Public Lands/Public Resource, Tribal Lands, and Timberland	Urban (U), Timber Production Zone (TPZ)	15.2 miles
Segment 2	Tribal Lands	Urban (U), Timber Production Zone (TPZ), Agricultural Exclusive (AE)	24.2 miles
Segment 3	Tribal Lands, Timberland, and Public Lands/Public Resource	Timber Production Zone (TPZ), Agricultural Exclusive (AE), Urban (U), Agricultural Exclusive (AE-B-5[160])	21.9 miles
Segment 4	Public Lands/Public Resource, Rural Residential, Commercial, Industrial	Community Commercial (C-2-D), Residential One-Family (R-1-D-T), Agricultural General (AG-D), Community Commercial (C-2-Q-X-D), Design Floodway (DF), Agricultural Exclusive (AE), Highway Service Commercial (CH-D-Q), Urban (U), Timber Production Zone (TPZ), Agricultural General (AG-D), Flood Plain (FP-D), Heavy Industrial (MH-D)	11.7 miles
Segment 5	Rural Residential, Commercial, Mixed Use, Residential Low Density, Public Lands/Public Resource, Timberland	(TPZ-AP-WR), (TPZ-AP-E,F,R), Agricultural Exclusive (AE), Agriculture (AG), Urban (U), Timber Production Zone (TPZ), Forestry Recreational (FR), Rural Residential Agricultural (RA-10/E,D), Commercial Timber (TC/E,D), Public Recreation (PR/F,E,D,W,R), Rural Residential Agriculture (RA-2.5-M/E,F,R), Highway Service Commercial (CH-D-Q), Community Commercial (C-2-D)	31 miles
Orick Tower	Agricultural Exclusive (AE)	Agricultural Exclusive (AE)	0.1 miles
Wiregrass Tower	Tribal Lands (TL)	Timber Production Zone (TPZ)	
Miners Creek Tower	Tribal Lands	Timber Production Zone (TPZ)	
Orleans Mountain	Public Lands (P)	Urban (U)	
Antenna Ridge	Public Lands (P)	Urban (U)	
Weitchpec	Tribal Lands (TL)	Urban (U)	
Tsunami Tower	Rural Residential (RR)	Rural Residential Agriculture (RA-10-Y2.5/E,D)	
Orleans Broadband Tower	Residential Estates (RE1-5)	Urban (U)	
McKinnon Hill Tower	Tribal Lands	Urban (U)	

SOURCES: Humboldt County, 2017a; Humboldt County GIS

4.11.3 Applicant Proposed Measures

The following Applicant Proposed Measures (APMs) related to land use have been included as part of the Project:

- **APM GEN-1:** Environmental Compliance Monitors hired by the Tribe will monitor construction activities and will report to the Tribe and to the agencies regarding construction compliance with permit terms and conditions. Monitoring activities will be structured in accordance with an Environmental Compliance Management Plan, developed by the Tribe and approved by the lead state and federal agencies prior to construction.
- **APM GEN-2:** Forest Plan Standards and Guidelines (as amended) will apply on NFS lands. Ground-disturbing activities will comply with all Agency-wide, regional, and state BMPs [best management practices].

- **APM GEN-3:** RNP policies and regulations will apply within the RNP. Ground-disturbing activities will comply with listed seasonal constraints and other requirements.
- **APM GEN-4:** As part of the Karuk Tribe’s environmental compliance commitment, the Construction Contractor(s) will be contractually bound to comply with all laws, regulations, and permit requirements, including the mitigation measures and other specific stipulations and methods that are developed as part of the NEPA/CEQA process.
- **APM SOIL-1:** Disturbance of soils and vegetation removal will be limited to the minimum area necessary for access and construction.
- **APM OM-1:** Before beginning an operations or maintenance project, KRRBI [Klamath River Rural Broadband Initiative] contractors or their subcontractors will clean all equipment that will operate off-road or disturb the ground. The entire vehicle or equipment will be cleaned at an off-site location.
- **APM OM-2:** The Karuk Tribe will provide crews and contractors with maps showing environmentally sensitive areas; these maps will include work zones as well as ROW [right-of-way] areas where ground disturbance will be avoided.

4.11.4 Environmental Impacts and Mitigation Measures

a) Physically divide an established community. *No Impact; None.*

The Project would traverse the land of several rural and tribal communities (e.g. Yurok and Karuk Tribes). However, the Project comprises fiber-optic cable that would be either installed underground or hung on existing or new poles, primarily along existing roadways. The Project would not create a new physical barrier (division) between any existing communities or restrict access to any community. Therefore, under this criterion, no impact would occur.

Mitigation: None required.

b) Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. *No Impact; None.*

The Project would be located entirely within acquired and existing ROWs, easements, and existing fee-owned land, and installed along existing utility poles. The Project would not result in conflicts with any land use plan, policy, or regulations. The Applicant has consulted with numerous federal, state, and local agencies throughout the Project development process (see Section 1.6), and all relevant permits, easements, and approvals would be obtained before Project implementation. The Project would be consistent with all land use plans, policies, and or regulations within the Project area. Therefore, under this criterion, no impact would occur.

Mitigation: None required.

4.11.5 NEPA Alternatives

No-Project Alternative

Under the No-Project Alternative, the Project would not be constructed, operated, or maintained; the Project site would continue to be used as under existing conditions. Therefore, under the No-Project Alternative, no impact on land use would occur.

4.12 Mineral Resources

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
12. MINERAL RESOURCES—Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

This section describes the existing sources of mineral resources in the Project area and evaluates the potential for construction, operation, and maintenance of the Project to result in the loss of availability of known or locally important mineral resources. The geographical extent of the Study Area for the evaluation of mineral resources was the same as that of the Project area (the footprint of all Project components including all areas of temporary and/or permanent ground disturbance).

4.12.1 Environmental Setting

Mineral Resources

Multiple information sources were consulted to determine the presence of mineral resources in the Study Area. These sources included the U.S. Geological Survey’s Mineral Resources Data System, which provides data describing mineral resources, including deposit name, location, commodity, deposit description, production status, and references, and which can be used to confirm the presence or absence of existing surface mines, closed mines, occurrences/prospects, and unknown/undefined mineral resources (USGS, 2017). Maps created by the California Geological Survey (CGS) (formerly known as the California Division of Mines and Geology), designed to protect mineral resources in California by classifying the regional significance of mineral resources, were also reviewed.

Both the locations of past and current mining activity and the presence of geologic materials that can be mined can also be used to assess the potential for the presence of mineral resources or the existence of mineral resource recovery sites (mines). According to the Mineral Resources Online Spatial Data available on the U.S. Geological Survey website, there are no active mines or mineral plants in the area (USGS, 2017).

Oil, Gas, and Geothermal Resources

The California Geologic Energy Management Division (CalGEM) (formerly known as the Division of Oil, Gas, and Geothermal Resources, or DOGGR) oversees the drilling, operation, maintenance, and plugging and abandonment of oil, natural gas, and geothermal wells in California, and tracks every known oil and gas well and field in the state. Maps maintained by CalGEM indicate that there

are no known oil or gas fields in the Study Area, and that no oil and gas wells exist within 1 mile of any of the proposed locations of Project components (DOGGR, 2017).

4.12.2 Regulatory Framework

For a discussion of federal, state and local regulations that are relevant to the Project see Appendix F.

4.12.3 Applicant Proposed Measures

The Project has no Applicant Proposed Measures pertaining to mineral resources.

4.12.4 Environmental Impacts and Mitigation Measures

a) **Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state. *No Impact; None.***

As described previously, the Project would not affect oil and gas extraction because there are no known oil or gas fields in the Study Area. In addition, no potential mineral resources are mapped in the Study Area. Therefore, under this criterion, no impact would occur.

Mitigation: None required.

b) **Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan. *No Impact; None.***

The Project would not be located on or near any mineral resource recovery sites identified in local land use plans. There are no mines or records of mining activity in the Study Area. The Project would not affect the availability of locally important mineral resources from an identified resource recovery site. Therefore, under this criterion, no impact would occur.

Mitigation: None required.

4.12.5 NEPA Alternatives

No-Project Alternative

Under the No-Project Alternative, the Project would not be constructed, operated, and maintained and the Project Site would continue to be used as under existing conditions. Therefore, under the No-Project Alternative, no impact on mineral resources would occur.

4.13 Noise and Vibration

	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporation</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
13. NOISE—Would the project result in:				
a) Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards and established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Generation of, excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) For a project located within the vicinity of a private airstrip or 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, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

This section discusses the potential noise and vibration impacts that could result from construction, operation, and maintenance of the Project. The analysis in this section was developed based on information in the Humboldt County General Plan (Humboldt County, 2017) and the Federal Highway Administration (FHWA) *Road Construction Noise Model* (FHWA, 2006), and the Federal Transit Administration’s (FTA’s) *Transit Noise and Vibration Impact Assessment* (FTA, 2006). For the purposes of this evaluation, the Study Area was defined as the footprint of all Project components, including all areas of temporary and/or permanent ground disturbance, with a 1,000-foot buffer.

4.13.1 Environmental Setting

Noise Background

Noise can be generally defined as unwanted sound. Sound, traveling in the form of waves from a source, exerts a sound pressure level (referred to as *sound level*) that is measured in decibels (dB), with 0 dB corresponding roughly to the threshold of human hearing and 120–140 dB corresponding to the threshold of pain.

Sound pressure fluctuations can be measured in units of hertz (Hz), which correspond to the frequency of a particular sound. Typically, sound does not consist of a single frequency, but rather a broad band of frequencies varying in levels of magnitude (sound power). The sound pressure level, therefore, constitutes the additive force exerted by a sound corresponding to the frequency/sound power level spectrum.

The typical human ear is not equally sensitive to all frequencies of the audible sound spectrum. As a consequence, noise impact assessments measure sound using an electronic filter that deemphasizes frequencies below 1,000 Hz and above 5,000 Hz, in a manner that corresponds to the human ear’s decreased sensitivity to low and extremely high frequencies instead of the frequency mid-range. This method of frequency weighting is referred to as *A-weighting* and is

expressed in units of A-weighted decibels (dBA). Frequency A-weighting follows an international standard methodology of deemphasizing frequency and is typically applied to community noise measurements. **Figure 4.13-1** show some representative noise sources and their corresponding A-weighted noise levels.

Noise exposure is a measure of noise over a period of time, while *noise level* is a measure of noise at a given instant in time. *Community noise* varies continuously over a period of time relative to the sound sources contributing to the community noise environment. Community noise is primarily the product of many distant noise sources, which constitute a relatively stable background noise exposure, with the individual contributors unidentifiable. The background noise level changes throughout a typical day, but does so gradually, corresponding with the addition and subtraction of distant noise sources such as traffic and atmospheric conditions. What makes community noise constantly variable throughout a day, besides the slowly changing background noise, is the addition of short-duration, single-event noise sources (e.g., aircraft flyovers, motor vehicles, sirens), which are readily identifiable to the individual receptor. These successive additions of sound to the community noise environment cause the community noise level to vary from instant to instant. Thus, to legitimately characterize a community noise environment and evaluate cumulative noise impacts, noise exposure must be measured over a period of time.

This time-varying characteristic of environmental noise is described using statistical noise descriptors. The following are the most frequently used noise descriptors:

- L_{eq}*: The energy-equivalent sound level used to describe noise over a specified period of time, typically one hour. The L_{eq} is the constant sound level that would contain the same acoustic energy as the varying sound level during the same time period (i.e., the average noise exposure level for the given time period).
- L_{max}*: The instantaneous maximum noise level for a specified period of time.
- L_{dn}*: A 24-hour day and night A-weighted noise exposure level, which accounts for the greater sensitivity of most people to nighttime noise by weighting noise levels at night (“penalizing” nighttime noises). Noise between 10:00 p.m. and 7:00 a.m. is weighted (penalized) by adding 10 dB to take into account the greater annoyance of nighttime noises.
- CNEL*: The community noise equivalent level (CNEL); similar to L_{dn} , the CNEL adds a 5-dB “penalty” for the evening hours between 7:00 p.m. and 10:00 p.m. in addition to a 10-dB penalty between the hours of 10:00 p.m. and 7:00 a.m.

As a general rule, in areas traffic dominates where the noise environment, the L_{eq} during the peak-hour is generally within 1–2 dB of the L_{dn} at that location (Caltrans, 2013a).

Effects of Noise on People

The effects of noise on people can be placed in three categories:

- Subjective effects of annoyance and dissatisfaction.
- Interference with activities such as speech, sleep, and learning.
- Physiological effects such as hearing loss or sudden startling.

Environmental noise typically produces effects in the first two categories. Workers in industrial plants can experience noise that results in the last category of effects. Because the effects of noise on people vary from person to person, it is not possible to measure the subjective effects of noise or the corresponding reactions of annoyance and dissatisfaction. A wide variation in individual thresholds of annoyance exists, and different tolerances to noise tend to develop based on an individual's past experiences with noise. Thus, an important way to predict a human reaction to a new noise environment to assess how it compares to the baseline noise condition (typically the existing environment) to which one has adapted: the so-called *ambient noise level*. In general, the more a new noise exceeds the existing ambient noise level, the less acceptable the new noise will be judged by those hearing it. Some examples of public reaction to various noise levels are provided in Figure 4.13-1.

With regard to increases in A-weighted noise levels, the following relationships occur (Caltrans, 2013a):

- Under controlled conditions in an acoustics laboratory, the trained healthy human ear is able to discern changes in sound levels of 1 dB.
- Outside of such controlled conditions, the trained ear can detect changes of 2 dB in normal environmental noise.
- It is widely accepted, however, that the average healthy ear can barely perceive noise level changes of 3 dB.
- A 5-dB change is a readily perceptible increase in the noise level.
- A 10-dB change is recognized as twice as loud as the original source.

These relationships occur in part because of the logarithmic nature of sound and the decibel system. Because the decibel scale is based on logarithms, two noise sources do not combine in a simple linear fashion, but rather logarithmically. For example, if two identical noise sources produce noise levels of 50 dBA, the combined sound level would be 53 dBA, not 100 dBA.

Noise Attenuation

Stationary point sources of noise, including stationary mobile sources such as idling vehicles, attenuate (lessen) at a rate between 6 dB for hard sites and 7.5 dB for soft sites for each doubling of distance from the reference measurement. *Hard sites* are those with a reflective surface between the source and the receiver such as parking lots or smooth bodies of water. No excess ground attenuation is assumed for hard sites and the changes in noise levels with distance (drop-off rate) is simply the geometric spreading of the noise from the source. *Soft sites* have an absorptive ground surface such as soft dirt, grass, or scattered bushes and trees. In addition to geometric spreading, an excess ground attenuation value of 1.5 dB (per doubling distance) is normally assumed for soft sites. Line sources (such as traffic noise from vehicles) attenuate at a rate between 3 dB for hard sites and 4.5 dB for soft sites for each doubling of distance from the reference measurement (Caltrans, 2013a).

Noise levels may also be reduced by intervening structures, such as a row of buildings, a solid wall, or a berm located between the receptor and the noise source.

Vibration

Vibration is an oscillatory motion through a solid medium in which the motion's amplitude can be described in terms of displacement, velocity, or acceleration. Several different methods are used to quantify vibration. The *peak particle velocity* (PPV) is defined as the maximum instantaneous peak of the vibration signal and is typically expressed in units of inches per second (in/sec). The PPV is most frequently used to describe vibration impacts to buildings. The *root mean square* (RMS) amplitude is most frequently used to describe the effect of vibration on the human body. The RMS amplitude is defined as the average of the squared amplitude of the signal. Decibel notation (vibration decibels, or VdB) is commonly used to measure RMS. The decibel notation acts to compress the range of numbers required to describe vibration (FTA, 2006). Typically, groundborne vibration generated by human activities attenuates rapidly with distance from the source of the vibration.

Some common sources of groundborne vibration are trains, heavy trucks traveling on rough roads, and construction activities such as blasting, pile driving, and operation of heavy earth-moving equipment. The effects of groundborne vibration include movement of building floors, rattling of windows, shaking of items on shelves or hanging on walls, and rumbling sounds. In extreme cases, vibration can damage buildings. Building damage is not a factor for most projects, with the occasional exception of blasting and pile driving during construction. In residential areas, the background vibration velocity level is usually around 50 VdB (approximately 0.0013 in/sec PPV).

Existing Noise-Sensitive Land Uses

Human response to noise varies considerably from one individual to another. Effects of noise at various levels can include interference with sleep, concentration, and communication, and can cause physiological and psychological stress and hearing loss. Given these effects, some land uses are considered more sensitive to noise levels than others due to the duration and nature of time people spend at these uses. These land uses are termed *sensitive receptors* for the purposes of this noise analysis.

In general, residences are considered most sensitive to noise as people spend extended period of time in them including the nighttime hours. Therefore, noise impacts on rest and relaxation, sleep, and communication are highest at residential uses. Schools, hotels, hospitals, nursing homes, and recreational uses are also considered more sensitive to noise because activities at these land uses involve rest and recovery, relaxation, and concentration, and increased noise levels tend to disrupt such activities. Places such as churches, libraries, and cemeteries, where people tend to pray, study, and/or contemplate, are also sensitive to noise; however, because of the limited time people spend at these uses, impacts are usually tolerable. Commercial and industrial uses are considered the least noise-sensitive.

Because the area surrounding the Project alignment consists primarily of undeveloped ground including many vegetated hills and forests typical of a rural environment, noise impacts were evaluated at sensitive receptors located within 1,000 feet of the Project alignment.

Segment 1

Sensitive receptors in the vicinity of Segment 1 include residences mostly near Orleans and Weitchpec, and Orleans Elementary and Head Start in Orleans. The closest residence is approximately 40 feet from this segment alignment and Orleans Elementary and Head Start schools are directly adjacent to the alignment (within approximately 40 feet).

Segment 2

Sensitive receptors in the vicinity of Segment 2 include residences in Weitchpec and Martins Ferry, along Cappel Road and McKinnon Hill Road, and near Johnsons. The closest residence is approximately 50 feet from this segment alignment. Weitchpec Yurok Magnet School in Weitchpec, Kepel Early Head Start and Head Start on McKinnon Hill Road, and Jack Norton Elementary School in Johnsons are directly adjacent to the Segment 2 alignment.

Segment 3

There are no sensitive receptors in the immediate vicinity of Segment 3. The closest sensitive receptor is a residence approximately 400 feet from this segment alignment off Bald Hills Road.

Segment 4

Sensitive receptors in the vicinity of Segment 4 include residences in Orick. The closest residence is approximately 50 feet from this segment alignment. Orick Elementary School in Orick is approximately 100 feet from the Segment 4 alignment. The closest sensitive receptor to the site of the proposed Orick Tower is approximately 500 feet north of the site.

Segment 5

Sensitive receptors adjacent to Segment 5 include residences in the vicinity of Orick, Fieldbrook, and McKinleyville. The closest single-family residence is approximately 20 feet from the alignment.

Existing Noise Environment

The noise environment in the Study Area is influenced by vehicular traffic along Klamath River Highway, Bald Hills Road, U.S. Highway 101, Hiltons Road, Truck Road, Crannell Road, and Dows Prairie Road. Other noise sources in the area consist of ocean surf along the coastal portions of Segment 5 and other natural sounds (e.g., river flow, birds chirping, crickets).

The ambient noise environment was estimated using a relationship between ambient noise levels and population density researched by the U.S. Environmental Protection Agency (EPA) (1974). EPA determined that ambient noise can be related to population density in locations away from transportation corridors, such as airports, major roads, and railroad tracks. **Table 4.13-1** provides typical ambient noise levels from environs ranging from 630 to 63,000 people per square mile. The Study Area is extremely rural, with low population density (see Section 4.14, *Population and Housing*); thus, using the population density of a quiet suburban residential area (average of 630 people per square mile) is an extremely conservative approach, as the Study Area likely has a much lower population density. Using the typical ambient noise levels presented in Table 4.13-1, ambient noise levels in the Study Area are expected to range from 48 to 52 dBA L_{dn} .

**TABLE 4.13-1
 TYPICAL AMBIENT NOISE LEVELS IN SUBURBAN AND URBAN ENVIRONMENTS**

Description	Typical Range Ldn, dBA	Average Ldn,	Average Census Tract Population Density, Number of People per Square Miles
Quiet Suburban Residential	48–52	50	630
Normal Suburban Residential	53–57	55	2,000
Urban Residential	58–62	60	6,300
Noisy Urban Residential	63–67	65	20,000
Very Noisy Urban Residential	68–72	70	63,000

NOTES: dBA = A-weighted decibels; Ldn = 24-hour day and night A-weighted noise exposure level
 SOURCE: EPA, 1974

4.13.2 Regulatory Framework

For a discussion of federal, state and local regulations that are relevant to the Project see Appendix F.

4.13.3 Applicant Proposed Measures

The project has no Applicant Proposed Measures pertaining to noise and vibration.

4.13.4 Environmental Impacts and Mitigation Measures

Approach to Analysis

Construction noise impacts are assessed based on the increase in noise levels potentially resulting from the operation of specified construction equipment, compared to existing noise level conditions. Analysis of the Project’s temporary construction noise effects was based on specific estimates of construction equipment and duration of use provided by the Applicant (Karuk Tribe, 2020). In all cases, the analyses accounted for attenuation of noise levels due to distances between the construction activity and the sensitive land uses in the site vicinity. Project construction-related noise levels at nearby sensitive land uses were estimated using the Federal Highway Administration’s Roadway Construction Noise Model (FHWA, 2006).

FTA has identified a daytime 1-hour L_{eq} level of 90 dBA as a noise level where adverse community reaction could occur at residential land uses (FTA, 2006). This noise level is used here to assess whether Project construction-related noise levels would have the potential to cause a substantial temporary or periodic increase in ambient noise levels at the locations of sensitive receptors.

For the analysis of long-term operational impacts on the existing ambient noise environment, impacts are considered significant if operation of the Project facilities would result in a substantial increase in noise levels in the Study Area. This evaluation uses a 5-dBA increase in noise exposure—which the California Department of Transportation (Caltrans) identifies as a readily perceptible noise increase (Caltrans, 2013a)—to assess the significance of operational noise increases on ambient noise levels in the Project vicinity.

For the purposes of the assessment of potential vibration impacts, the methodology described in Caltrans's *Transportation and Construction Vibration Guidance Manual* has been used to evaluate Project-related vibration effects on nearby sensitive land uses (Caltrans, 2013b). For adverse human reaction, the analysis applies the "severe" threshold of 0.4 in/sec PPV for continuous/frequent intermittent sources (Caltrans, 2013b). For risk of architectural damage to historic buildings and structures, the analysis applies a threshold of 0.25 in/sec PPV. A threshold of 0.5 in/sec PPV has been used to assess damage risk for all other buildings (Caltrans, 2013b).

Impact Discussion

- a) **Generate a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards and established in the local general plan or noise ordinance, or applicable standards of other agencies.**
Less than Significant with Mitigation; Short-term; Localized; Moderate.

Construction

The Project would be constructed in Humboldt County. Because the Humboldt County Code currently does not establish noise exposure standards, the policies found in the Noise Element of the Humboldt County General Plan have been used to evaluate whether the Project would expose existing sensitive receptors to noise levels in excess of local standards. Pursuant to the Noise Element, construction activities that conform to the terms of the approved permit would be exempt from Humboldt County's Short-term Noise Performance Standards (Table 4.13-2) (Humboldt County, 2017).

Although no applicable local policies or standards are available to judge the significance of short-term daytime construction noise levels, FTA's *Transit Noise and Vibration Impact Assessment* has identified a daytime 1-hour L_{eq} level of 90 dBA as a noise level at which adverse community reaction could occur at residential land uses (FTA, 2006). This noise level is used here to assess whether construction-related noise levels would cause a substantial temporary or periodic increase in ambient noise levels at sensitive receptor locations.

The majority of Project construction would be undertaken over a nine-month period (see Table 2-6). As described in Section 2.6.16, construction activities would only occur between 6:00 a.m. and 6:00p.m. unless at least one mile from a school, residence or other sensitive receptors, Monday through Sunday, or as limited by the road manager. Off-road equipment and vehicles would be used primarily for cable installation and construction of the Orick Tower. **Table 4.13-2** shows typical noise levels produced by the types of off-road equipment that would be used during construction.

The operation of each piece of construction equipment would not be constant throughout the day, as equipment would be turned off when not in use. Over a typical workday, equipment would operate at different locations and all the equipment would not operate concurrently at the same location.

To quantify construction-related noise exposure at the nearest sensitive receptors, the analysis assumed that, except for open-trench cable installation, the two loudest pieces of construction equipment would operate at the location closest to the nearest off-site sensitive receptors. For

open-trench cable installation, the operation of two pieces of equipment at the same location would not be feasible, given the linear and constrained nature of open-trench activities; therefore, to quantify noise levels associated with those activities, the single loudest piece of construction equipment was assumed to operate at the location closest to the nearest off-site sensitive receptor. **Table 4.13-3** presents the highest L_{max} and L_{eq} noise levels to which sensitive receptors could be exposed.

**TABLE 4.13-2
 REFERENCE CONSTRUCTION EQUIPMENT NOISE LEVELS (50 FEET FROM SOURCE)**

Type of Equipment	L_{max} , dBA	Hourly L_{eq} , dBA
Belowground Cable Installation—Open Trench		
Backhoe	78	74
Concrete/Asphalt Saw	90	83
Roller	80	73
Belowground Cable Installation—Directional Drilling		
Horizontal Bore/Drill	82	76
Vacuum Excavating Equipment	85	81
Aboveground Cable Installation		
Backhoe	78	74
Man-Lift	75	68
Cable Puller/Compressor	78	74
Air Compressor	78	74
Construction of the Orick Tower		
Backhoe	78	74
Erector Crane	81	73
Small Concrete Mixer	79	75

NOTES: dBA = A-weighted decibels; L_{eq} = energy-equivalent sound level; L_{max} = instantaneous maximum noise level
 SOURCE: FHWA, 2006.

**TABLE 4.13-3
 CONSTRUCTION NOISE LEVELS AT EXISTING SENSITIVE RECEPTORS**

Category	Distance to Nearest Sensitive Receptor (feet)	Attenuated Maximum Noise Level, L_{max} dBA	Attenuated Hourly Noise Level, L_{eq} dBA
Belowground Cable Installation—Open Trench (Operation of an Asphalt Saw)			
Segment 1	40	92	85
Segment 2	50	90	83
Segment 3	400	72	65
Segment 4	50	90	83
Segment 5	20	98	91
Belowground Cable Installation—Directional Drilling (Operation of a Drill/Bore and Vacuum Excavating Equipment)*			
Segment 1	100	81	76
Segment 2	100	81	76
Segment 3	400	69	64
Segment 4	100	81	76
Segment 5	100	81	76

**TABLE 4.13-3 (CONTINUED)
CONSTRUCTION NOISE LEVELS AT EXISTING SENSITIVE RECEPTORS**

Category	Distance to Nearest Sensitive Receptor (feet)	Attenuated Maximum Noise Level, L _{max} dBA	Attenuated Hourly Noise Level, L _{eq} dBA
Aboveground Cable Installation (Operation of a Man Lift and Backhoe)			
Segment 1	40	83	79
Segment 2	50	81	77
Segment 3	400	63	59
Segment 4	50	81	77
Segment 5	20	89	85
Orick Tower Construction (Operation of a Erector Crane and Small Concrete Mixer)			
Orick Tower	575	62	56

NOTES: dBA = A-weighted decibels; L_{eq} = energy-equivalent sound level; L_{max} = instantaneous maximum noise level

* Directional drilling would occur at least 100 feet from any residences (Eckert, pers. comm., 2020).

SOURCE: FHWA, 2006.

As shown in Table 4.13-3, sensitive receptors located 20 feet from Segment 5 would be exposed to construction noise levels associated with open-trench installation work that would exceed FTA’s adverse community reaction threshold of 90 dBA L_{eq}. Therefore, the impact of a temporary increase in ambient noise levels would be significant and major. However, implementing Mitigation Measure NOISE-1 would reduce construction noise levels to below the significance threshold, which would reduce this impact to a less than significant and moderate level.

Mitigation Measure NOISE-1: To reduce daytime noise impacts from Project construction along Segment 5, the Applicant shall implement the following measures:

- Equipment and trucks used for project construction shall use the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures, and acoustically attenuating shields or shrouds, wherever feasible).
- Concrete saws shall be operated at least 30 feet from the nearest occupied residence, or shall be equipped with a noise-attenuating shield or shroud that blocks the line of sight between the saw and the nearest residences.

Operation

Once construction is complete, the primary noise sources generated during Project operation would be routine maintenance work for the fiber optic cable lines and operation of emergency backup generators. Maintenance of the fiber optic cable lines would only occur if an optic cable is severed or damaged. The loudest piece of equipment used during routine maintenance of the fiber optic cables would be a bucket truck, which maintenance workers would use to lower an optic cable for repair. The proposed Orick Tower would house a new propane-powered emergency backup generator. The generator would supply the Orick Tower with power in the event of a power outage and would run for only 12 minutes per week during routine maintenance. The generators at the wireless towers (Wiregrass Tower, Miners Creek Tower, and McKinnon Hill

Tower) would be replaced with new generators; however, the generator upgrade at these facilities would not result in any changes in operation.

As discussed previously, the Noise Element of the Humboldt County General Plan exempts noise sources categorized as “short-term” (i.e., operational maintenance and generator noise) provided that the heavy equipment and power tools used conform to the terms of the approved permit and that only portable generators are used during power outages. Because all Project-related operational activities would not operate outside an approved permit and only on-site generators would be used during power outages, the Project’s operational activities would be consistent with policies in the Humboldt County General Plan.

As described previously, although no applicable local policies or standards are available to determine the significance of permanent Project-related operational noise levels, this evaluation uses a 5-dB increase in noise exposure, which is considered a readily perceptible increase in noise levels, to assess the significance of operational noise increases (Caltrans, 2013a). That is, a significant impact would occur if the Project would cause an increase in noise levels of 5 dB or greater, relative to ambient noise levels at a given sensitive receptor.

Operational activities associated with the Orick Tower are the only source that could increase the existing ambient noise levels in the Project vicinity. Noise would be generated during the routine maintenance testing of emergency backup generators, which would run for 12 minutes per week during routine maintenance. The generators are more than 575 feet from the nearest sensitive receptor. The proposed generators can generate noise levels as high as 63 dBA L_{eq} from a distance of 23 feet (Karuk Tribe, 2020:). Assuming a drop-off rate of 7.5 dB per doubling of distance (i.e., soft site), the nearest receptor to the Orick Tower would be exposed to a noise level of 28 dBA L_{eq} during operation of the generator and the L_{dn} generated by the emergency backup generated during routine maintenance would be 15 dBA. Because existing ambient noise in the Study Area is expected to range from 48 to 52 dBA L_{dn} , operation of the emergency backup generators would not result in a perceivable increase in existing ambient noise levels and would not exceed the applied threshold of 5 dB. Therefore, operation of the proposed on-site generators would not result in a substantial permanent increase in ambient noise levels. This impact would be less than significant and minor.

Mitigation: None required.

b) Generate excessive groundborne vibration or groundborne noise levels. *Less than Significant; Short-term; Localized; Minor.*

Vibration impacts are considered significant if they would result in vibration levels that are either substantial enough to result in damage to nearby structures or buildings, or generally accepted as an annoyance to sensitive land uses. Groundborne noise occurs when vibrations transmitted through the ground result in secondary radiation of noise. Groundborne noise is generally associated with transit trains through tunnels and underground blasting activities, neither of which is proposed as part of this Project; therefore, this analysis focuses on groundborne vibration.

Human annoyance and building damage are typically the primary issues underlying temporary construction impacts from vibration. Construction activities that result in temporary vibration impacts include impact pile driving, blasting, the use of large bulldozers, and auger drills. Project

construction would not require the use of impact pile driving equipment or blasting during installation of the fiber optic cables or construction of the proposed facilities.

For adverse human reaction, this analysis has applied the “severe” threshold of 0.4 in/sec PPV for continuous/frequent intermittent sources (Caltrans, 2013b). For risk of architectural damage to historic buildings and structures, the analysis has applied a threshold of 0.25 in/sec PPV. A threshold of 0.5 in/sec PPV has been used to assess damage risk for all other buildings (Caltrans, 2013b). For purposes of this impact discussion, sensitive receptors include both people and structures. As discussed further in Section 4.5, *Cultural Resources*, there are no historic structures near any of the Project components. **Table 4.13-4** presents the maximum vibration levels (PPV) to which nearby residences and structures could be exposed during operation of on-site construction equipment at each Project component site. As shown, no residences or structures are located close enough to any construction areas for either an adverse human reaction or building damage to occur. This impact would be less than significant and minor.

**TABLE 4.13-4
SUMMARY OF VIBRATION LEVELS AT SENSITIVE RECEPTORS DURING CONSTRUCTION**

Construction Activities	Type of Equipment	Reference PPV (inch per second) from a Distance of 25 Feet	Distance to Nearest Residences	Attenuated PPV (inch per second)
Belowground Cable Installation	Caisson Drill	0.089	35	0.0537
Aboveground Cable Installation	Jackhammer	0.003	35	0.0018
Orick Tower	Jackhammer	0.003	575	0.00003

NOTE: PPV = peak particle velocity

SOURCE: FTA, 2006.

Mitigation: None required.

- c) **For a project located within the vicinity of a private airstrip or 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, expose people residing or working in the project area to excessive noise levels. *Less than Significant; Short-term; Localized; Minor.***

The airport noise contours found in the Humboldt County General Plan indicate that the Project area, at its closest point, is located approximately 0.73 mile from the Arcata-Eureka Airport’s 60 dBA CNEL noise contour (Humboldt County, 2017). Therefore, the Project would not expose people residing or working in the Project area to excessive airport noise levels. This impact would be less than significant and minor.

Mitigation: None required.

4.13.5 NEPA Alternatives

No-Project Alternative

Under the No-Project Alternative, the Project would not be constructed, operated and maintained, or decommissioned. Therefore, under the No-Project Alternative, no impact would occur with respect to noise or vibration.

4.14 Population and Housing

	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
14. POPULATION AND HOUSING— Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

4.14.1 Environmental Setting

This section discusses the potential population and housing impacts that could result from the construction, operation, and maintenance of the Project. The Project would include both aboveground and belowground construction in a rural, lightly populated region of Humboldt County. The Project would primarily serve the Karuk and Yurok Tribes, remote individual residences, and towns and villages including Orick, Orleans, Wautec, and Weitchpec (Karuk Tribe, 2020). The geographical extent of the Study Area for the evaluation of population and housing was the same as that of the Project area (the footprint of all Project components including all areas of temporary and/or permanent ground disturbance) and the above-named communities within which the Project would be constructed and operated.

Population

Humboldt County’s population growth rate increased in the late 1980s and early 1990s, but has since returned to a lower consistent growth rate over the past 20 years. The most current annual growth rate calculated, as of 2010, was 0.62 percent; this growth rate was anticipated to decline after 2020 (Humboldt County, 2017a). The predicted trend can be seen in the slight decrease in the county’s population that has occurred consecutively since 2017 (U.S. Census Bureau, 2020).

According to the California Department of Finance, the cities of Eureka and Arcata together contain about 35 percent of Humboldt County’s population. The county’s major population centers include Eureka, Arcata, McKinleyville, and Fortuna (Humboldt County, 2017b). In 2018, the cities of Eureka and Arcata had populations of 27,020 and 18,050, respectively (U.S. Census Bureau, 2019a). Towns in the Study Area, such as Orick, have notably smaller population e.g. Orick had a total population of 296 in the year 2018 (U.S. Census Bureau, 2019a). The U.S. Census Bureau does not contain available population data for any other town located within the Study Area (U.S. Census Bureau, 2020).

Humboldt County’s population is projected to grow at a much slower rate than that of the rest of California. The state’s population is anticipated to grow by approximately 38 percent from the

years 2016 through 2040. By contrast, the California Department of Finance forecasts that Humboldt County will grow by approximately 2.4 percent between 2016 and 2040, to a population of 138,307 in 2040. The county would represent substantially less than 1 percent of the statewide population in 2040 (Humboldt County, 2019).

Although population data for the entire county are provided below (**Table 4.14-1**), this information cannot be used to accurately represent historic and population growth within the Study Area; the Study Area is almost entirely rural and includes very few areas of urban development. Population data are limited for several of the smaller remote towns within the Study Area. The nearest region of substantial projected growth is in McKinleyville, approximately 3.2 miles south of Segment 5 (Humboldt County, 2017c).

**TABLE 4.14-1
 HISTORIC AND PROJECTED POPULATION GROWTH IN HUMBOLDT COUNTY, 1980–2040**

Year	Total County Population	Population of Unincorporated Areas	Percent of Total Population in Unincorporated Areas	Average Annual Increase (countywide total)	Total Percent Change over Period (countywide total)
1980	108,525	59,046	54.4%		
1990	119,118	62,169	52.2%	0.94%	9.76%
2000	126,518	67,236	53.1%	0.60%	6.21%
2010	134,623	71,916	53.4%	0.62%	6.41%
2016	135,116	71,830	53.2%	0.06%	0.37%
2020	139,033	73,912	53.2%	0.72%	2.90%
2030	140,608	74,750	53.2%	0.11%	1.13%
2040	138,307	73,526	53.2%	-0.16%	-1.64%

SOURCES: Humboldt County, 2017c.

Housing

Table 4.14-2 depicts housing data for Humboldt County.

**TABLE 4.14-2
 2018 HOUSING DATA**

Jurisdictional Area	Total Housing Units	Occupied Housing Units	Vacant Housing Units
Humboldt County	62,862	54,276	8,559

SOURCE: U.S. Census Bureau, 2019b

4.14.2 Regulatory Framework

For a discussion of federal, state and local regulations that are relevant to the Project see Appendix F.

4.14.3 Applicant Proposed Measures

The Project has no Applicant Proposed Measures pertaining to population and housing.

4.14.4 Environmental Impacts and Mitigation Measures

- a) Induce substantial population growth in an area, either directly or indirectly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure). *No Impact; None.***

The Project would not include housing, and population growth would not occur as a direct result of the construction or operation of the Project. Minimal population growth could occur during construction with the temporary presence of an additional 24 daily construction workers (see Section 2.6.13). However, this effect would be temporary and Project construction would not generate any new permanent jobs in the Study Area.

Operation of the Project would provide and expand the availability of high-speed internet access to existing rural residents, businesses, and schools in the Study Area. Implementation of the Project would be expected to contribute to the retention of existing residents and businesses, which could indirectly contribute to a limited amount of future growth. As discussed in Section 4.11, the Project would be constructed in a region with large amounts of national park and forest land and very low existing population density. The introduction of improved internet access would not be expected to trigger an influx of residents or businesses; thus, the Project would not likely result in any substantial population growth in the Study Area. As stated above in Section 4.14.1, Humboldt County is projected to grow at a much slower rate than California as a whole and would represent substantially less than 1 percent of the statewide population in 2040 (Humboldt County, 2019). Therefore, under this criterion, no impact would occur.

Mitigation: None required.

- b) Displace existing people or housing, necessitating the construction of replacement housing elsewhere. *No Impact; None.***

Construction and operation of the Project would not displace any existing people or housing and thus would not require construction of replacement housing. Therefore, under this criterion, no impact would occur.

Mitigation: None required.

4.14.5 NEPA Alternatives

No-Project Alternative

Under the No-Project Alternative, the Project would not be constructed, operated, and maintained, and the Project site would continue to be used as under existing conditions. Therefore, under the No-Project Alternative, no impact on population and housing would occur.

4.15 Public Services

	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
15. PUBLIC SERVICES— Would the project:				
a) Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:				
i) Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
ii) Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iii) Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
iv) Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
v) Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

This section presents information regarding existing public services including fire and police protection, schools, parks, libraries, and other public facilities in the vicinity of the Project site, discussed by jurisdiction below. For the purposes of evaluation of public services, the study area was defined as the footprint of all components of the Project including all areas of temporary and/or permanent ground disturbance as well as public service facilities serving residents and visitors within 5 miles¹ of the Project area.

4.15.1 Environmental Setting

Fire Protection

Fire protection service involves a range of coordinated activities including dispatch, emergency medical services, technical rescues, accident response, hazardous materials, and general public assistance. In responding to emergency situations, local fire departments in Humboldt County work closely with law enforcement, public utilities, the county office of emergency services, and ambulance providers (Humboldt County, 2017a).

The study area includes vast acreage of forest lands also requiring wildland fire management and protection. Wildland fire protection is provided through the coordinated efforts of the U.S. Forest Service (USFS), National Park Service (NPS), the Karuk and Yurok Tribes, and the California Department of Forestry and Fire Protection (CAL FIRE). Local fire protection is provided by several fire services including Hoopa Fire Department, Hoopa Volunteer Fire and Rescue, Yurok Volunteer Fire Company, Orick Volunteer Fire Department, and Orleans Volunteer Fire Department. Many areas outside of established district boundaries receive fire protection from a

¹ Five miles was selected as a reasonable distance within which potential impacts associated with public services could occur as a result of the Project.

volunteer fire company not affiliated with districts. The Humboldt County Fire Chiefs' Association (HCFCFA) has been working to increase the level of service through coordination, communication, standardization and support (Humboldt County Fire Chiefs' Association, 2018).

U.S. Forest Service and National Park Service

USFS and NPS work together by agreement as one fire management organization, supporting each unit's fire and land management objectives to protect both federal and state fire protection areas of the Redwood National Park (RNP) and Six Rivers National Forest (SRNF). USFS and NPS also work closely with CAL FIRE, tribal governments, and multiple local and volunteer fire departments (Humboldt County, 2015). The Project alignment would be located within 10 miles of SRNF and 17.2 miles of RNP (Karuk Tribe, 2020). The USFS and NPS are responsible for fire protection within both of these national forests.

California Department of Forestry and Fire Protection

CAL FIRE serves and protects the people, properties, and resources in State Responsibility Areas²; and in portions of federal lands in Humboldt and Del Norte counties. CAL FIRE provides fire suppression protection for the Yurok Indian Sustained Yield Lands and maintains stations at Elk Camp, Fortuna, Trinidad, Klamath, and Crescent City (Yurok Tribe, 2018). The Project would be located in an area served by the CAL FIRE Humboldt–Del Norte Unit (CAL FIRE, 2018). The CAL FIRE Humboldt–Del Norte Unit staff work closely with other local emergency responders through mutual and automatic aid agreements (Humboldt County, 2017a). As shown in Chapter 2, Figure 2-5, the Project would connect to the CAL FIRE Elk Camp Forest Fire Station, located on Bald Hills Road as a “last-mile” (0.1 mile) spur of Segment 3.

Orick Volunteer Fire Department

The Orick Volunteer Fire Department (OVFD) provides fire protection and medical aid services to the community of Orick and the surrounding area through the Orick Community Services District (OCSD). The OVFD located at 101 Swan Road in Orick has mutual aid agreements with CAL FIRE, Redwood National Park, and the Klamath Fire Department (Humboldt County Fire Chiefs' Association, 2018). The Project would connect to the OVFD along Segment 4 in Orick.

Orleans Volunteer Fire Department

The Orleans Volunteer Fire Department, based in a fire station located at 38162 Highway 96, provides fire and emergency medical response services to the lower-middle Klamath River community including the towns of Orleans, Somes Bar, Weitchpec, and the communities in between (Orleans Volunteer Fire Department, 2018). The Project would connect to this fire station along Segment 1.

² CAL FIRE has a legal responsibility to provide fire protection on all State Responsibility Area (SRA) lands, which are defined based on land ownership, population density and land use (CAL FIRE, 2012).

Yurok Tribe Wildland Fire Department and Volunteer Fire Department

The Yurok Tribe has a tradition of fire management for the purposes of maintaining the landscape for resource gathering, and for maintaining open prairies fuel breaks around homes and villages (Yurok Tribe, 2012). Although 20th century fire suppression practices have altered these practices to some extent, current tribal forest managers are returning traditional practices for land management through the Yurok Tribe's Forestry Department. The Yurok Tribe Volunteer Fire Department (YTVFD) operates out of a fire station in Weitchpec and serves an area of 80 square miles and approximately 350 residents. The YTVFD is made up of four volunteer firefighters with 10 auxiliary firefighters who respond to structural and wildland fires, as well as calls for emergency medical services (Humboldt County Fire Chiefs Association, 2018). Through an agreement with BIA, the Yurok Tribe maintains a wildland fire station and crew to provide supplementary fire protection (Humboldt County and Humboldt County Fire Safe Council, 2019a). Segment 2 of the Project alignment would be located adjacent to and provide last-mile service for the Weitchpec fire station and public safety office and the Yurok Tribal Wildland Fire Department's Tully Creek Station.

Emergency Medical Services

The nearest emergency medical facility to the study area is the Mad River Community Hospital Trauma Center, located in Arcata approximately 5 miles from the southernmost portion of Segment R5. The Mad River Community Hospital provides critical care and works closely with regional emergency medical services providers and facilitates medical evacuation with an on-site landing pad and air rescue transport station (Mad River Community Hospital, 2018). Minor emergency medical services are also provided in the Karuk Tribe's Clinic in Orleans, and at the United Indian Health Service Clinic located at the junction of State Routes (SRs) 69 and 196 in Weitchpec. The Project would connect to these two local clinics through last-mile installations in Segments 1 and 2, respectively.

Police Protection

State

The California Highway Patrol (CHP) is an agency created in 1929 to provide uniform traffic law enforcement for the state of California. The CHP Humboldt Area, as part of the Northern Division, has jurisdiction over the interstates and state routes in the Project area including U.S. Highway 101, SR 36, and SR 299 in addition to the hundreds of miles of unincorporated county roadways throughout Humboldt County (California Highway Patrol, 2018). The CHP Humboldt Area office is located at 255 East Samoa Boulevard in Arcata. The CHP Willow Creek Resident Post provides response service for the rural roadways in the eastern portion of the study area including SR 96 and SR 169 (California Highway Patrol, 2018).

Local

Humboldt County Sheriff's Office

The Humboldt County Sheriff's Office is responsible for law enforcement in the unincorporated area of the County and provides a range of law enforcement services including criminal investigation, court services, and corrections. The Sheriff's Office has mutual aid agreements with cities and the CHP. Mutual aid is an agreement between agencies where the agency of jurisdiction can request manpower or resources from allied state agencies or local agencies within the surrounding areas. The average response time for the Humboldt County Sheriff's Office varies depending on terrain and other access conditions in rural to semi-rural areas. However, deputies are capable of responding to calls for service in less than 10 minutes in over half the communities analyzed. In the more rural areas of the County, maximum response times may reach 50 minutes because of longer travel distances, varied topography, available resources, and the locations of the Sheriff Deputy on patrol in relation to the incident (Humboldt County, 2017b).

Yurok Tribe

The Yurok Tribe Police Department provides public safety services within the Yurok Reservation coordinated from two tribal public safety offices located in Klamath, and in Weitchpec, adjacent to the intersection Segments 1 and 2 of the Project (Yurok Tribe, 2018).

Schools and Libraries

There are six public school facilities located in the study area: Orleans Elementary School, Orleans Head Start, Orick Elementary School, Weitchpec-Magnet School, Jack Norton Elementary, and Head Start-Ke Pel, all affiliated with the Klamath-Trinity Unified School District. The public schools listed below would be connected as anchor institutions for the Project (see Figure 2-2).

Orleans Elementary School is located at 38016 Highway 96 in the town of Orleans. Orleans Head Start Program is located adjacent to Orleans Elementary along Segment 1 of the Project (Orleans Elementary School, 2018). Orleans Head Start and Head Start Ka'Pel would also be served by the Project through last-mile connections in Segments 1 and 2, respectively. Weitchpec-Magnet School located at 11800 Highway 96 (on Segment 1 of the Project) has approximately 15 students in attendance (Weitchpec Yurok Magnet Elementary School, 2018). Jack Norton Elementary has approximately 30 students and is located at 263 Jack Norton School Road in Hoopa, on a spur directly northeast of the Project's Segment 2 (Weitchpec Yurok Magnet Elementary School, 2018). Orick Elementary School has approximately 15 students and is located at 120918 along U.S. Highway 101 along Segment 4, approximately 1-mile northeast of the Project's proposed Orick tower (Orick School District, 2018).

There are two libraries in the study area operated by Humboldt County (Humboldt County, 2018). The Trinidad Branch Library is located at 380 Janis Court in Trinidad, approximately .2 miles west of Segment R5. The McKinleyville Library is located at 1606 Pickett Road in McKinleyville, approximately 1.5 miles south of the terminus of Segment R5. Additionally, the Karuk Tribe operates a computer/senior center and library in Orleans. This facility along with the Karuk Tribe's government, housing, and natural resources offices would connect to Segment 1 of the Project.

Parks

Parks and public open space recreational resources in the study area include Humboldt Lagoon State Park, RNP, and SRNF, among others. As a rural area, Humboldt County contains a wealth of outdoor recreational opportunities. More than 20 percent of the County's 2.3 million acres are protected open space, forests, and recreational areas. Within the County boundary, there are federal and state parks, 16 Humboldt County parks and beaches, recreational areas and reserves, city parks, and parks operated by special districts and non-profit organizations (Humboldt County, 2017c).

There are nearly 468,000 acres of federally managed parklands in Humboldt County, including National Forest, National Parks, and National Wildlife Areas, and 7,600 acres of U.S. Bureau of Land Management Reserve Lands (Humboldt County, 2017c). Segment 1 of the Project would cross through 10 miles of USFS lands and Segments 2 through 4 would cross through 17.2 miles of RNP (Karuk Tribe, 2020). The Project would include the installation of last-mile facilities that would connect to the Redwood National and State Parks Operations Center in Orick (Segment 4), and the SRNF Ranger Station in Orleans (Segment 1). For a more detailed discussion of recreational facilities, including parks and open space areas in the vicinity of the Project area, see Section 4.16.

4.15.2 Regulatory Framework

For a discussion of federal, state and local regulations that are relevant to the Project see Appendix F.

4.15.3 Applicant Proposed Measures

The following Applicant Proposed Measures (APMs) related to public services have been included as part of the Project:

- **APM FIRE-1:** Before the start of construction, the Applicant's Construction Contractor will prepare a project-specific Construction Fire Prevention Plan (CFPP) to ensure the health and safety of construction workers and the public from fire-related hazards. Local fire departments shall be consulted during plan preparation and the CFPP will include fire safety measures as recommended by these departments. The CFPP shall list fire prevention and extinguishment procedures and specific emergency response and evacuation measures that would be followed during emergency situations. The CFPP also would provide smoking and fire-related rules, storage, and parking areas, require usage of spark arrestors on construction equipment, and fire-suppression tools and equipment. The CFPP shall include, but not be limited to, the following:
 1. Water tanks, water trucks, or portable water backpacks (where space or access for a water truck or water tank is limited) will be sited/available in the Project area for fire protection where fire hydrants are not available.
 2. All construction vehicles shall have fire suppression equipment.
 3. All construction workers shall receive training on the proper use of fire-fighting equipment and procedures to be followed in the event of a fire.

4. As construction may occur simultaneously at several locations, each construction site shall be equipped with fire extinguishers and fire-fighting equipment sufficient to extinguish small fires.
 5. Construction personnel shall be required to park vehicles away from dry vegetation.
 6. Prior to construction, contact and coordinate with the appropriate fire departments to determine the appropriate amounts of fire equipment to be carried on the vehicles and appropriate locations for the water tanks, water trucks, and/or water backpacks. The Applicant shall submit verification of its consultation with the appropriate fire departments to the CPUC.
 7. The CFPP shall be submitted to CPUC prior to commencement of construction activities and shall be distributed to all construction crew members prior to construction of the Project.
 8. Cease work during Red Flag Warning events in areas where vegetation would be susceptible to accidental ignition by Project activities (such as welding or use of equipment that could create a spark). During Red Flag Warning events all non-emergency construction and maintenance activities will cease in affected areas.
- **APM TRANS-1:** Traffic control measures such as traffic control personnel, warning signs, lights, and barriers will be used during construction as specified in the encroachment permits from road managers to ensure safety and to minimize traffic congestion.
 - **APM TRANS-2:** Emergency vehicle access to private property will be maintained during construction.

4.15.4 Environmental Impacts and Mitigation Measures

- a) **Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times or other performance objectives for any of the public services:**

a.i) **Fire Protection. *No Impact; None, Beneficial.***

Project construction would include activities that could generate a temporary increased need for emergency response services. Use of construction equipment for trenching and storage, transport, and use of flammable/hazardous materials (e.g., diesel fuel, oil) during construction could likewise result in fire hazards that could require fire protection services. However, APM FIRE-1 would require that the contractor prepare a fire plan as part of the proposed Project. The fire plan would require various measures including training in fire suppression, and the presence and appropriate use of fire response tools on all Project vehicles, such that many of the increased risks associated with construction would be addressed in the field, as appropriate. The Project would not introduce any new uses to the area that would generate long-term changes to or demand for fire protection services. Fire protection service effects would be limited primarily to the construction period. Since construction activities would be limited in duration and would require a small, local construction workforce, they would not increase long-term demand for fire

protection services such that new or physically altered facilities would be required. Therefore, under this criterion, no impact would occur.

Operation of the Project would provide enhanced internet communication capabilities for several fire departments in the study area, ultimately improving response times and performance objectives. The fire station facilities and anchor institutions in the study area would benefit from implementation of the Project. The Project would result in minor alterations of fire protection facilities and anchor institutions such as Orleans and Orick Volunteer Fire Departments and Wautec Firehouse, which are connected to broadband. The proposed alterations would not involve ground disturbance, nor would this construction require permanent staff. Physical alteration of the facilities would be minimal, and limited to the installation of antennae, and other minor infrastructure components required to establish internet connectivity for these fire departments.

Maintenance of the Project's fiber optic cable network would occur along roads occasionally used for delivery of emergency services but very little disruption of the roadways would be anticipated to occur as a result of such maintenance. Therefore, under this criterion, no impact would occur.

Mitigation: None required.

a.ii) Police Protection. *No Impact; None, Beneficial.*

Construction of the Project would include activities that could lead to temporary increases in demand for police services but these would be limited to the construction period. The Project would not provide or generate a need for any new police facilities, and would not introduce any new inhabitable structures or population to the study areas such that the existing demand for police services would increase. Construction activities could require temporary traffic control or other public safety measures, which would typically be coordinated by law enforcement staff. However, the Project would implement APM TRANS-1 (as stated above) such that traffic control measures including personnel, warning signs, lights, and barriers would be implemented during construction as specified in the encroachment permits from road managers to ensure safety and to minimize traffic congestion, and would reduce the potential for police calls and services. For more details regarding traffic control, see Section 4.17. Therefore, under this criterion, no impact would occur during Project construction.

Operation of the Project would require occasional maintenance of the Project's fiber optic lines which could involve minor delays to assess and repair fiber cables, however such impacts would not be substantial. Therefore, under this criterion, no impact would occur during Project operation.

As discussed above, implementation of the Project could improve communication and response times for public safety personnel in the study area, as the Project would establish high-speed internet connectivity for the Yurok Tribe's public safety office in Weitchpec, and Tully Creek facility, National and State Parks operation centers, among others. Additionally, communication between the various emergency response departments in the rural communities would improve, leading to enhanced coordination as a result of the Project's implementation.

Mitigation: None required.

a.iii) Schools. *No Impact; None, Beneficial.*

As described in Section 4.14, the Project would not result in any permanent increases in the local population. At its peak, construction of the Project would employ up to 24 crew members on a daily basis. Given that an increased demand for public schools is ordinarily associated with a population increase, and the Project neither includes housing, nor would it require long-term staff; no increase in local population would be expected to result from construction or operation of the Project.

Minor alterations to existing schools would occur to facilitate installation of the last-mile appurtenant structures connecting Orleans Head Start and Orleans Elementary (in Segment 1); Weitchpec School, Ka’Pel Head Start, and Jack Norton Elementary School (in Segment 2); and Orick Elementary School (in Segment 4) with high-speed broadband internet capability. These minor alterations would include no ground-disturbing activities during construction. Following construction, these educational institutions would be provided with enhanced communication. Under this criterion, no adverse impact would occur. Impacts, if any occur, would be beneficial.

Mitigation: None required.

a.iv) Parks. *No Impact; None, Beneficial.*

The Project does not propose housing and would not require the construction of any new or modified parks, and, as such, would not increase local population levels impacting demand or performance objectives for federal, state, or local parks. Under this criterion, there would be no impact. Minor alterations to park and ranger facilities would occur to facilitate installation of the last-mile structures connecting the Redwood National and State Park Southern Operations Center (in Segment 4); and the Orleans Ranger Station (in Segment 1) to facilitate internet capabilities. These minor alterations would include no ground-disturbing activities during construction. Following construction, these operations centers would be provided with enhanced communication. Under this criterion, no adverse impact would occur. Impacts, if any occur, would be beneficial.

Mitigation: None required.

a.v) Other Public Facilities. *No Impact; None, Beneficial.*

No new public facilities such as public libraries or hospitals are proposed to be constructed as part of the Project. The Project would not result in substantial adverse impacts on other public facilities (e.g., public libraries or emergency medical services) because, as discussed above, the Project would not result in a significant increase in local population or housing, which would typically be associated with increased demand for such public service facilities.

The Project would include minor alterations to existing facilities such as the Karuk Tribe’s government and natural resources offices, senior center, and library to facilitate enhanced internet connectivity. These minor alterations would include no ground-disturbing activities during construction.

Following construction, these public facilities would be provided with enhanced communication. Under this criterion, no adverse impact would occur. Impacts, if any, would be beneficial.

Mitigation: None required.

4.15.5 NEPA Alternatives

No-Project Alternative

Under the No-Project Alternative, the Project would not be constructed, operated, and maintained, and the Project site would continue to be used as under existing conditions. Therefore, under the No-Project Alternative, no impact related to public services would occur, and several public services would not receive the benefits of improved internet access that the Project would provide.

4.16 Recreation

	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
16. RECREATION—Would the project:				
a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

This section presents an evaluation of potential impacts of the Project on recreational resources. The Study Area is defined as the footprint of all Project components, including all areas of temporary and/or permanent ground disturbance as well as neighboring parks, open space, and other lands used for recreational purposes within 1 mile¹ of the Project alignment.

4.16.1 Environmental Setting

As a predominantly rural area, Humboldt County has a wealth of outdoor recreational opportunities. More than 20 percent of the county’s 2.3 million acres are protected open space, forests, and recreational areas. Within the boundaries of Humboldt County, there is a collection of federal and state parks, 16 county parks and beaches operated by the Humboldt County Parks Division, recreational areas and reserves, city parks, and parks operated by special districts and nonprofit organizations. These areas contribute to the quality of life in Humboldt County and provide needed recreational opportunities for residents of neighboring counties and visitors outside of California. All federal, state, and local recreational areas located within the Study Area, and their management, are identified and described in more detail below.

Federal Recreational Resources

The Project alignment would traverse several portions of federally recognized public recreational areas. The recreational resources within the Study Area include Redwood National Park (RNP), Six Rivers National Forest (SRNF), and two recreational areas owned by the U.S. Bureau of Land Management (BLM). These recreational resources are described in more detail below.

Redwood National and State Parks

RNP is managed jointly by the National Park Service (NPS) and California Department of Parks and Recreation and consists of federally and state protected forests extending 131,983 acres along the Northern California coast. Jedediah Smith Redwoods State Park, Del Norte Coast Redwoods State Park and Prairie Creek Redwoods State Park were created by the State of California in the 1920s. RNP, designated in 1968, was established to preserve primeval coastal redwoods. In 1994, the California Department of Parks and Recreation and the National Park Service manage the four-park

¹ One mile was selected as a reasonable distance within which to evaluate potential effects of the Project, because beyond this distance, impacts on recreational resources would be expected to either not occur or be imperceptible.

area for maximum resource protection (NPS, 2020). The park offers a range of recreational opportunities including wildlife viewing, walking trails, camping, photography, bicycling, kayaking, and horseback riding. The Project alignment would be located along the northeastern rim of RNP, with one Project right-of-way (ROW) located within the existing road ROWs for Bald Hills Road, U.S. Highway 101 (U.S. 101), and Foster Lane (see Chapter 2, Figures 2-7 and 2-8). The Project ROW would traverse approximately 17 miles of RNSP along portions of Segments 3 and 4 (Figure 2-1). The Thomas H. Kuchel Visitor Center, an NPS and California Department of Parks and Recreation (State Parks) information center, is also located close to Segment 5 along U.S. 101 in Orick (NPS, 2018).

Six Rivers National Forest

Located in the northwestern corner of California is the SRNF. The SRNF is managed by the U.S. Forest Service (USFS) and offering nearly 1 million acres of forest for public use and recreation. The SRNF contains six predominant rivers and is named after the Eel, Van Duzen, Klamath, Trinity, Mad, and Smith Rivers. There are 372 camping units available in 15 primary campgrounds. Additional recreational opportunities include bicycling, fishing, hiking, horseback riding, hunting, nature viewing, and off-highway vehicle (OHV) riding.

However, because of the nature of the SRNF, outdoor recreation activity is heavily river oriented, with the exception of hunting, and includes a wide variety of water activities. Swimming and float trips are one of the most popular and common recreational activities on any of the main rivers. The Klamath River, located within the SRNF and adjacent to the Project alignment, is used for numerous recreational activities, such as fishing, kayaking, and rafting (USFS, 2018).

The Project would include two crossings of the Klamath River: at Orleans, an approximately 680-foot crossing (Figure 2-4), and Martin's Ferry Bridge, a 705-foot crossing (see Chapter 2, for more details on water crossings). Recreational resources located within the Study Area would include the Aikens Creek River access areas, E-Ne-Nuck campground, and the Klamath River. Segment 1 of the Project would traverse a total of 11.9 miles of SRNF.

U.S. Bureau of Land Management

BLM manages several parcels of land in northern Humboldt County. BLM is currently revising the Northwest California Integrated Resource Management Plan, which consists of two existing resource management plans: Arcata Resource Area Resource Management Plan (1992) and the Redding Resource Management Plan (1993). The Project would be located within the boundaries of the Arcata Resource Area Management Plan. (BLM, 2018). Recreational activities in the Arcata Field office include opportunities to backpack, mountain bike, horseback ride, rock climb, ride OHVs, hunt fish, whitewater raft, kayak, camp, photograph and view wildlife (BLM, 2016). The Segment 1 alignment would directly transect 0.7 mile of two small portions of BLM open access parcels located east of Weitchpec along State Route 96 and the Klamath River (Green Info Network, 2021). The Project alignment would not traverse any areas designated as an OHV trail route along BLM-regulated land

State Recreational Resources

California Department of Parks and Recreation

State Parks manages two state parks in the Study Area, Humboldt Lagoons State Park and Harry A. Merlo State Recreation Area. Humboldt Lagoons State Park encompasses Stone Lagoon, and is located adjacently west of U.S. 101. Harry A. Merlo State Recreation Area is located directly south

of Humboldt Lagoons. Humboldt Lagoons State Park and Harry A. Merlo State Recreation Area are located approximately one-half mile west of Segment R5 and provide many options for recreational activities, such as boating, hiking, fishing, beach access, swimming, windsurfing, and geocaching (State Parks, 2018).

4.16.2 Regulatory Framework

For a discussion of federal, state and local regulations that are relevant to the Project see Appendix F.

4.16.3 Applicant Proposed Measures

The following Applicant Proposed Measures (APMs) related to recreational resources has been included as part of the Project (Karuk Tribe, 2020):

- **APM REC-1: Final Cleanup:** Final cleanup will ensure that all construction areas are free of any construction debris including, but not limited to: assembly scrap metals, oil or other petroleum-based liquids, construction wood debris, and worker-generated litter. Permanent erosion control devices will be left in place.

4.16.4 Environmental Impacts and Mitigation Measures

- a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. *No Impact; None.***

Numerous federal, state, and local recreational lands are available for public use within the Study Area. As discussed in Section 4.14, the Project is not anticipated to directly contribute to population growth, but could result in a short-term increase during construction as a result of construction workers temporarily relocating to the area. Although an increase in local workers could result in a small increase in use of recreational facilities in the Study Area, this would not be expected to result in or accelerated physical deterioration of existing parks or other recreational facilities. Therefore, under this criterion, no impact would occur.

Mitigation: None required.

- b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment. *No Impact; None.***

The Project would not result in the construction or expansion of any recreational facilities. Therefore, under this criterion, no impact would occur.

Mitigation: None required.

4.16.5 NEPA Alternatives

No-Project Alternative

Under the No-Project Alternative, the Project would not be constructed, operated, and maintained. The Project site would continue to be used as under existing conditions. Therefore, under the No-Project Alternative, no impact on recreation would occur.

4.17 Socioeconomics and Environmental Justice

A CEQA lead agency may use information about the economic or social impacts of a project to determine the significance of physical changes caused by the project, but the economic or social effects of a project are not treated as significant effects on the environment. Additionally, CEQA does not use the term “environmental justice” or require the evaluation of impacts on minority or low-income communities in the way required by Executive Order (EO) 12898. The Office of the California Attorney General (OAG) has clarified that environmental justice concerns are relevant to the analysis of a project under CEQA, but has recommended that lead agencies address environmental justice by evaluating whether a project’s impacts would affect a community whose residents are particularly sensitive to the impact (i.e., sensitive receptors) and whether a project would have significant effects on communities when considered together with any environmental burdens those communities already are bearing, or may bear from probable future projects (i.e., cumulative impacts) (OAG, 2012).

The impacts of the Project on sensitive receptors are analyzed where appropriate (e.g., in Section 4.3, *Air Quality*, and in Section 4.9, *Hazards and Hazardous Materials*). Impact conclusions in this section, however, are not significance determinations as that concept is understood under CEQA. Rather, the conclusions in this section are relevant only to the NEPA analysis of the Project. Therefore, this analysis evaluates impacts in terms of context and intensity and does not include significance determinations relevant to CEQA. The evaluation criteria used in this section are described below.

4.17.1 Environmental Setting

Socioeconomics

The Project would be located in a remote, rural region of northeastern Humboldt County characterized by large tracts of public lands managed by the National Park Service (NPS), U.S. Forest Service (USFS), and U.S. Bureau of Land Management (BLM); two large Native American Reservations (Hoopa Valley Reservation and Yurok Reservation); and forested private land. The population is dispersed among remote homesteads and small villages. Some larger population centers exist along the rivers and near the coastline (Karuk Tribe, 2020). The Study Area for the socioeconomic analysis includes communities and census tract block groups near the footprint of all components of the Project, communities that would receive broadband service from the Project (Orleans, Weitchpec, Wautec, Johnsons, and Orick¹), as well as communities that have been identified to house construction workers (Willow Creek and Orick).

Employment and Income

Before the 1980’s the County’s economy centered around natural resources industries such as timber production and manufacturing, dairy farming, cattle ranching, and fishing, and these industries still contribute significantly to the County’s economy (Humboldt County, 2017).

¹ Socioeconomic and demographic data is not available for the unincorporated communities of Orleans, Weitchpec, Wautec, and Johnsons. Therefore, this analysis uses data from census tract block groups that include these communities.

According to 2017 data from the California Employment Development Department (EDD), the top industries by employment were government; trade, transportation, and utilities; educational and health services; and leisure and hospitality. In 2017, there were approximately 1,930 individuals employed in construction in Humboldt County (EDD, 2020). Within the Study Area, full-time employment is generally limited to tribal, federal, state, and local government jobs along with a few service jobs. The majority of employment within the Study Area is part-time and is related to forestry, fishing, agriculture, or transportation of products (Karuk Tribe, 2020).

As demonstrated in **Table 4.17-1**, unemployment rates in portions of the Study Area are higher than those for the County, ranging from 8.8 percent in Hoopa Valley Reservation to 18.8 percent on the Yurok Reservation. Median household incomes in portions of the Study Area are lower than those for the County, such as \$18,906 within Census Tract 101.02 Block Group 2 and \$37,222 within the Hoopa Valley Reservation.

**TABLE 4.17-1
 LABOR FORCE, UNEMPLOYMENT, AND MEDIAN HOUSEHOLD INCOME FOR POTENTIALLY AFFECTED
 JURISDICTIONS (2019 5-YEAR ESTIMATES 2015-2019)**

Jurisdiction	Labor Force	Unemployment Rate ^b	Median Household Income
Humboldt County	67,323	7.8%	\$48,041
Willow Creek CDP	578	0.0%	\$65,433
Orick CDP	162	1.2%	\$37,031
CT 101.02, BG 3 ^a	206	1.0%	\$42,561
CT 101.02, BG 1 ^a	565	0.4 %	\$75,375
CT 101.02, BG 2 ^a	69	18.8%	\$18,906
Hoopa Valley Reservation	1,156	8.8%	\$37,222
Yurok Reservation	314	16.9%	\$32,727
CT 102	2,333	4.5%	\$47,583
CT 104	3,000	6.5%	\$62,900

NOTES:

- a. Block group (BG) level data is not available in the Census product DP03. Therefore, data for block groups are from Census product B19013 and B23025.
- b. Not seasonally adjusted.

SOURCES: U.S. Census Bureau, 2019a, 2019b, 2019c.

Population and Housing

Details of population and housing are provided in Section 4.14.

Lifestyle and Cultural Values

Social Organizations and Institutions

Due to the rural and remote nature of the Study Area, communities are generally located far from key community institutions such as fire departments, health care facilities, schools, and police departments. As described in Section 4.15, public services providers in Humboldt County such as

the Humboldt County Sheriff's Department and the North Coast Emergency Medical Services serve a large area with limited resources and difficult access to remote communities (Humboldt County, 2017). Some public services are available locally such as volunteer fire departments and elementary schools in Orick and Orleans; however, these local institutions have very limited resources. Particularly notable is the lack of access to healthcare within rural Humboldt communities. As described by the director of Humboldt State University Student Health and Wellbeing, "Humboldt County is drastically underserved, with a ratio of nearly 1,500 people per primary care provider and 4,500 people per psychiatrist" (Houston, 2018). Additionally, most county-level government services and institutions are located in Eureka, making participation in and utilization of such services difficult for remote communities within the Study Area. For example, the community of Johnsons, which is located along on Segment 2, is a 2.5-hour drive from the city of Eureka (approximately 90 miles).

Within Humboldt County, there are eight federally recognized tribes and approximately 95,000 acres of land designated as American Indian tribal lands (HCDHHS, 2014). Together the eight tribal governments constitute over 8,346 individuals, the largest Native American population in California (Humboldt County, 2014). The largest of these tribal governments include the Karuk, Yurok, and Hoopa Tribes. These tribal governments provide many health, family, administrative, education, judicial, public safety, and governance services in the communities within the Study Area (Yurok Tribe, 2020; Karuk Tribe, 2018).

Lifestyle and Values

Rural communities in Humboldt County face many economic, educational, and public health challenges as a result of the remoteness of many residential areas and challenges with travelling long distances on rural roads to access to public services. Due to the abundance of natural resources, the County's economy was historically reliant upon industries such as forestry, fishing and agriculture, but has now shifted toward more government and service industries, although jobs related to forestry, fishing, and agriculture still play an important role in rural communities (Humboldt County, 2017). Due to poverty and physical isolation, among other factors, in recent years both tribal and non-tribal communities have experienced high suicide rates, high addiction rates, and low education attainment (Houston, 2017, 2018; Humboldt County, 2017).

The distinct cultural perspectives and traditions of each of the Karuk, Yurok, and Hoopa Tribes are intertwined with beliefs regarding sustaining the diversity of ecosystems on which the tribes depend.² The Karuk, Yurok, and Hoopa tribes each have distinct fishing practices; however, Chinook and coho salmon, steelhead, Pacific lamprey, and sturgeon are important to each tribe's traditions. Many of the cultural traditions and rituals of tribes in the region center around the surrounding river ecosystems (NMFS, 2012a, 2012b, 2012c). Despite declining abundance of key species such as coho and Chinook salmon, green sturgeon, and lamprey, subsistence hunting and fishing plays an important role in the traditions, culture, and diet of the tribes (NMFS, 2012a,

² The Hoopa Tribe is not one of the Project proponents, the Hoopa Valley Reservation is not included in the proposed service area of the Project, and no Project components have been proposed to be built within the Hoopa Valley Reservation. However, the Hoopa Valley Reservation has been included in this analysis as Project components would be build adjacent to the reservation and workers would likely commute through the reservation from Willow Creek to Segments 1, 2, and 3 and individuals on the reservation could experience socioeconomic or environmental justice impacts resulting from the Project.

2012b, 2012c). Restoring cultural practices and natural ecosystems that are central to the Karuk and Yurok tribes are key values for both tribes. The Yurok Tribe identified the Hoopa-Yurok Settlement Act, dam removal, natural resources protection, sustainable economic development enterprises, and land acquisition as the Tribe's major initiatives (Yurok Tribe, 2018).

Environmental Justice

Two guiding documents were used to evaluate whether a minority and/or low-income community exists within the Study Area: *Environmental Justice: Guidance Under the National Environmental Policy Act* (CEQ, 1997) and *Final Guidance for Incorporating Environmental Justice Concerns in USEPA's NEPA Compliance Analyses* (EPA, 1998). The screening process relies on data from the 2015-2019 American Community Survey 5-year estimates. Because the geographic scope of impacts differs by resource, the communities considered for the environmental justice analysis similarly vary by type of environmental or human health effect. **Table 4.17-2** lists the resources with the potential for impacts on human health or the environment that could affect local populations. Other resources discussed in this analysis, such as energy conservation, greenhouse gases, mineral resources, utilities, and paleontological resources were determined to have no potential impacts on human health or the environment that could affect local populations and, therefore, were not reviewed further for potential environmental justice effects. Table 4.17-2 shows the geographic scope of the environmental justice analysis for each resource considered.

TABLE 4.17-2
GEOGRAPHIC SCOPE OF ENVIRONMENTAL JUSTICE ANALYSIS BY RESOURCE

Resource	Geographic Scope of Effects	Communities Potentially Affected
Aesthetics	Communities within 5-mile radius	Orick CDP, CT 101.02, BG3, CT 101.02, BG1, CT 102, CT 104, Big Lagoon Rancheria, Trinidad Rancheria, Yurok Reservation, Hoopa Valley Reservation.
Air Quality	500-foot radius around Project site	Orick CDP, CT 101.02, BG3, CT 101.02, BG1, CT 102, CT 104, Big Lagoon Rancheria, Trinidad Rancheria, Yurok Reservation, Hoopa Valley Reservation.
Biological Resources (traditional and medicinal use of vegetation)	Footprint of Project components.	Yurok Reservation and community, Hoopa Valley Reservation and community, Karuk communities, Big Lagoon Rancheria, Trinidad Rancheria.
Cultural Resources	0.5-mile radius around Project components	Yurok Reservation and community, Hoopa Valley Reservation and community, Karuk communities, Big Lagoon Rancheria, Trinidad Rancheria.
Geology and Soils	Project site	Orick CDP, CT 101.02, BG3, CT 101.02, BG1, CT 102, CT 104, Yurok Reservation.
Hazards and Hazardous Materials	Project site	Orick CDP, CT 101.02, BG3, CT 101.02, BG1, CT 102, CT 104, Yurok Reservation, Big Lagoon Rancheria, Trinidad Rancheria.
Hydrology	Watersheds, downstream areas.	Orick CDP, CT 101.02, BG3, CT 101.02, BG1, CT 102, CT 104, Yurok Reservation, Big Lagoon Rancheria, Trinidad Rancheria.
Noise and Vibration	1000-foot radius from Project site boundary	Orick CDP, CT 101.02, BG3, CT 101.02, BG1, CT 102, CT 104, Yurok Reservation, Big Lagoon Rancheria, Trinidad Rancheria.
Population and Housing	Communities housing construction workers	Orick CDP, Willow Creek CDP
Public Services	Communities within 5 mile radius Of Project components	Orick CDP, CT 101.02, BG3, CT 101.02, BG1, CT 102, CT 104, Yurok Reservation, Hoopa Valley Reservation.

TABLE 4.17-2 (CONTINUED)
GEOGRAPHIC SCOPE OF ENVIRONMENTAL JUSTICE ANALYSIS BY RESOURCE

Resource	Geographic Scope of Effects	Communities Potentially Affected
Recreation	Communities within 5 mile radius Of Project components	Orick CDP, CT 101.02, BG3, CT 101.02, BG1, CT 102, CT 104, Yurok Reservation, Hoopa Valley Reservation, Big Lagoon Rancheria, Trinidad Rancheria.
Socioeconomics	Communities near project footprint construction. Communities housing construction workers; and communities receiving	Willow Creek CDP, Orick CDP, CT 101.02 BG 3, CT 101.02 BG1, CT 102, CT 103, Yurok Reservation, Hoopa Valley Reservation, Big Lagoon Rancheria, Trinidad Rancheria.
Transportation	Communities near proposed transportation routes	Orick CDP, CT 101.02 BG 3, CT 101.02 BG1, CT 102, CT 103, Yurok Reservation, Hoopa Valley Reservation, Big Lagoon Rancheria, Trinidad Rancheria.

SOURCE: Data compiled by Environmental Science Associates in 2020

Table 4.17-3 includes data on minority populations and incidences of poverty for Humboldt County, Willow Creek CDP, Orick CDP, CT 101.02 BG 3, CT 101.02 BG 2, CT 101.02 BG1, CT 105.01, CT 105.02, CT 102, CT 104, Big Lagoon Rancheria, Trinidad Rancheria, the Yurok Reservation, and the Hoopa Valley Reservation. Some overlap exists between the above planning areas and census-designated areas, the purpose of which is to ensure that appropriate geographic units were examined to avoid artificially diluting or inflating the affected minority populations (CEQ, 1997).

TABLE 4.17-3
RACIAL AND INCOME CHARACTERISTICS FOR RESIDENTS WITHIN THE STUDY AREA, 2015-2019

	Total Population	Percent Total Minority (Other Than Non-Hispanic White)	Percent of People Below Poverty Level
Humboldt County, CA	135,940	25.6	20.1
Willow Creek CDP	1,513	18.0	10.7
Big Lagoon Rancheria	5	0.0	20.0
Trinidad Rancheria	155	87.7	14.2
Orick CDP	389	27.2	26.1
CT 101.02, BG3^a	643	64.0	47.2
CT 101.02, BG2^a	836	76.3	58.6
CT 101.02, BG1^a	1,182	6.4	12.9
CT 105.01	7,876	29.8	16.2
CT 105.02	6,308	18.8	23.4
CT 102	2,775	15.1	16.2
CT 104	3,659	11.4	7.9
Yurok Reservation, CA	836	59.0	33.9
Hoopa Valley Reservation	3,263	90.7	35.9

NOTES: All population, race, and poverty data are from the 2016 American Community Survey

a. Block group (BG) level data is not available in the Census product DP03 and DP05. Therefore, data for block groups is from Census product B17021 and B03002.

b. The Census Tract block group was analyzed to isolate the California portion of the California-Oregon reservation.

SOURCE: U.S. Census Bureau, 2019a, 2019d, 2019e, 2019f.

Minority Populations

According to CEQ (1997), minority individuals are defined as members of the following groups: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. For the purposes of environmental justice, a minority population is identified when the minority population of the potentially affected area is greater than 50 percent or meaningfully greater than the percentage of the minority population in the general population or other appropriate unit of geographical analysis (CEQ, 1997; EPA, 1998).³ The guidance does not provide a numerical threshold for “meaningfully greater.” For the following analysis, the percentage of minority population is considered to be meaningfully greater than that of the general population, Humboldt County, if the percentage of minority population in the affected area is 1.5 times greater than the percentage in the general population (i.e., 38.4 percent). For this analysis, due to the relatively small minority population in Humboldt County, the more conservative “meaningfully greater” threshold is used to identify minority populations. As demonstrated in Table 4.17-3, below, five of the 12 planning areas analyzed have minority populations: Trinidad Rancheria, CT 101.02 BG3, CT 101.02 BG 2, the Yurok Reservation, and the Hoopa Valley Reservation. Therefore, these communities are considered communities of potential concern with regard to environmental justice.

Segment 2 is located entirely within the Yurok Reservation and is just north of the Hoopa Valley Reservation. Segment R5 passes just east of the Big Lagoon Rancheria, and the Trinidad Rancheria. These reservations are geo-political tribal designated areas. Although the geographic area of the reservation is occupied by many members of these tribes, there are larger populations of individuals who are associated with the above-mentioned tribes but do not live within reservation boundaries. Additionally, although the Karuk Tribe has never had a reservation, the Tribe owns 652 acres in trust status (NMFS, 2012a). Native Americans living in the region, whether or not they are a part of an identified minority or low-income population by geographic location, represent a community that may be at risk for environmental justice impacts related to physical impacts on tribal cultural resources.

Low-Income Populations

For the purposes of this analysis, if the proportion of individuals in a community living under the poverty level is 150 percent or more than that of Humboldt County (i.e., 30.15 percent), that community is considered a low-income population. For this analysis, estimates of individuals living in poverty were obtained from the most recent 2015-2019 American Community Survey 5-Year Estimates.

As demonstrated in Table 4.17-3, four of the 12 planning areas analyzed are low-income communities: CT 101.02 BG3, CT 101.02 BG 2, the Yurok Reservation, and the Hoopa Valley Reservation. Therefore, these three communities are considered communities of potential concern with regard to environmental justice.

³ According to the CEQ guidelines, “Minority” is defined as all persons except non-Hispanic whites. In other words, minority is defined as any racial groups other than white, and all persons of Hispanic origin, regardless of race.

Children

In accordance with EO 13045, this analysis addresses the protection of children from environmental health risks. As EO 13045 notes,

A growing body of scientific knowledge demonstrates that children may suffer disproportionately from environmental health risks and safety risks. These risks arise because: children’s neurological, immunological, digestive, and other bodily systems are still developing; children eat more food, drink more fluids, and breathe more air in proportion to their body weight than adults; children’s size and weight may diminish their protection from standard safety features; and children’s behavior patterns may make them more susceptible to accidents because they are less able to protect themselves (§1-101).

According to the 2015-2019 ACS data, children make up approximately 5.3 percent of the population in Humboldt County (U.S Census Bureau, 2019d). Each of the planning areas in the Study Area (except Big Lagoon Rancheria) had a slightly higher percentage of children (people under 5 years of age). The Hoopa Valley Reservation and CT 105.02 had percentages of young people that were over 1.5 times the rate in Humboldt County. Therefore, these planning areas are considered to have particularly high concentrations of children.

4.17.2 Regulatory Framework

For a discussion of federal, state and local regulations that are relevant to the Project see Appendix F.

4.17.3 Applicant Proposed Measures

The Project has no Applicant Proposed Measures pertaining to socioeconomics or environmental justice.

4.17.4 Environmental Impacts and Mitigation Measures

Approach to Analysis

Socioeconomics

The CEQ’s regulations for implementing the NEPA (40 CFR Parts 1500-1508) provide standards for addressing social and economic impacts. Section 1508.14 states: “‘Human environment’ shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment.” The regulations provide no specific thresholds of significance for socioeconomics impact assessments. Significance varies, depending, among other things, on the setting of the proposed action (40 CFR 1508.27[a]). While the BIA NEPA Handbook suggests that socioeconomic factors should be considered, it does not provide detailed guidance. The analysis of socioeconomic impacts evaluates impacts of the Project with respect to employment and income in local communities, population and housing; and changes to community character and infrastructure.

Environmental Justice

For environmental justice impacts, a comparative analysis is provided for each resource area that has the potential to result in impacts on the human environment to determine if Project effects

would be disproportionately high and adverse for identified environmental justice communities (EPA, 1998). The potential for environmental effects to disproportionately affect children was considered. It was concluded that the environmental impacts of the project did not pose a risk to the health of children in the Study Area due to the lack of significant air quality impact, the short temporary nature of construction along the segments, and the beneficial impacts that broadband access can have for children in rural communities. Therefore, the potential for the Project to have an adverse impact on the health of children is not discussed further in the analysis below.

Impact Discussion

Socioeconomics

a) Result in major changes to population, housing, employment, or other socioeconomic factors. *Minor; Beneficial.*

Employment and Income

The Tribe has retained the services of two Native-owned contractors for the management and construction of the Project (Karuk Tribe, 2020). During construction, the proposed Project would employ up to 24 construction workers. If these construction workers were to be hired locally, construction would result in a minor, short-term beneficial impact on employment and income. If the construction workforce were to be sourced from outside of the Study Area, construction would result in a minor, short-term beneficial impact on the local economy as workers from outside the Study Area would stay in local accommodations and purchase local goods and services. This small increase in spending within the study area could result in some positive economic activity and a slight increase in household incomes in an area with high unemployment and low household incomes.

Project operation would provide about 616 households in Orick, Orleans, Johnsons, Wautec, Weitchpec, and other areas with broadband access. Approximately half of these households currently are unserved and half are underserved (Karuk Tribe, 2020). Implementation of the Project would provide improved business opportunities to rural and remote communities through the provision of high-speed internet access. Project operation would increase employment opportunities and flexibility for residents in the Study Area. As a result, operation would result in a long-term, minor beneficial effect on employment and income in the Study Area.

Population and Housing

As analyzed in Section 4.14, the Project would not induce substantial population growth during construction and would have minor, short-term impact on population and housing as a result of construction. As described in Section 2.10, workers are expected to be housed in Willow Creek during the construction of Segments 1, 2, and 3 and in McKinleyville or Orick for construction of Segments 4 and 5. There are sufficient housing options in both places to temporarily house construction workers; therefore, impacts would be minor and temporary.

Due to the Project's increase in availability of high-speed internet access, Project operation could indirectly contribute to the retention of existing residents and business and, therefore, could indirectly contribute to a small amount of future growth. However, as described in Section 4.17.1,

the Study Area has very low existing population density and historically has had difficulty retaining residents and businesses. Therefore, any potential future growth from operation of the Project would be minor and beneficial.

Community Character and Infrastructure

As mentioned above, construction is expected to require a workforce of 24 individuals over a 19-month period. Construction would result in a negligible amount of disruption to nearby communities, as construction would not be stationary and would move along each Project segment throughout the construction process. Additionally, due to the small workforce and the temporary nature of construction, the short-term presence of construction workers in Willow Creek and Orick would not result in a major amount of disruption to the communities. As a result, construction would have a negligible impact on the community character within the Study Area.

Operation would provide high-speed internet access to communities that are currently unserved or underserved. The Project would provide communities within the study area the opportunity to access resources that are available online such as government services, educational programs, and digital healthcare programs. Providing access to health care and education to these remote communities would help begin to address the social and health challenges that are prevalent in the Study Area. Additionally, as part of the purpose and need for the Project, the Tribe has determined that providing access to broadband services would help “facilitate cultural preservation by enabling the Yurok and Karuk tribes to have regular communication with tribal members not living within the tribal boundaries. Providing online classes in Native languages, beading, and cultural awareness, among others, will enable tribal members to contribute to the maintenance of cultural traditions and to make them a part of everyday life for tribal members regardless of where they live” (Karuk Tribe, 2020). Therefore, Project operation would facilitate and enable tribal cultural preservation and will enhance community character and connectedness within the Study Area. For these reasons, Project operation would result in a long-term benefit to community character and infrastructure.

Mitigation: None required.

Environmental Justice

b) Result in disproportionately high or adverse impacts on minority or low-income communities. *Minor.*

Construction and operation have the potential to result in impacts on communities of concern (CT 101.02 BG3, Trinidad Rancheria, the Yurok Reservation, and the Hoopa Reservation) for the following issues:

Aesthetics and Visual Resources

As analyzed in Section 4.1, Project construction could result in minor visual impacts associated with the presence of equipment, vehicles, and materials, and construction activities such as trenching. Such impacts would be temporary and minor. Once operational, most Project components either would not be visible (underground) or would not degrade existing views, as they would be

placed on or near existing structures. Impacts on aesthetics would be minor and localized and would not result in disproportionately high or adverse impacts on communities of concern.

Air Quality

As analyzed in Section 4.3, Project construction would not violate any air quality standards or contribute substantially to an air quality violation. Additionally, due to the linear nature of construction, individual sensitive receptors would not be exposed to toxic air contaminants for longer than 2–3 weeks and impacts from short-term exposure would be negligible. Although Project operation would require occasional use of generators, these would not be used within 500 feet of any receptors and would not result in any air quality impact on nearby communities. Therefore, the Project would not result in air quality impacts that would have disproportionately high and adverse impacts on communities of concern.

Biological Resources

As described above and in Section 4.5, fish play an important role in Karuk, Yurok, and Hoopa traditions, ceremonies, and diets. As analyzed in Section 4.4, in locations within the Study Area where the Project is proposed for construction over rivers and other water bodies construction would utilize existing crossings and would not result in impacts on fish. Therefore, the Project would not result in impacts with respect to biological resources that would have disproportionately high and adverse impacts on communities of concern.

Cultural Resources

As analyzed in Section 4.5, inadvertent impacts on cultural resources could occur as a result of the Project. Such impacts could result in a disproportionate adverse impact on members of Native American groups traditionally and culturally affiliated with the Project site. Mitigation Measure CUL-1 (Section 4.5), which outlines requirements for archaeological and Native American monitoring, respectively, as well as protocols for resource assessment and treatment, would reduce these impacts. Mitigation Measure CUL-1 requires that the cultural resources monitoring plan (CRMP) reflects input from Karuk and Yurok Tribal representatives and provide measures for Native American monitoring and Native American coordination and input. This measure requires that the CRMP specify the duration and timing of monitoring during ground disturbing activities. Mitigation Measure CUL-1 requires the retention of a Native American monitor who is traditionally and culturally affiliated with the Project site to carry out the CRMP monitoring requirements. Thus, Mitigation Measure CUL-1 would ensure the involvement of representatives of Native American groups traditionally and culturally affiliated with the Project site in the protection of burial and other sites.

Because potential impacts on these sites would be avoided or minimized with input and monitoring support from these Native American groups, no disproportionately high and adverse impact would occur as a result of the disturbance or loss of sites of importance to Native Americans.

Geology, Soils, and Paleontological Resources

As analyzed in Section 4.7, Project construction and operation would not cause exposure of people to any additional risks associated with fault rupture, seismic ground shaking, ground liquefaction,

landslides, or expansive soils. Therefore, the Project would not result in impacts on geology and soils which would be disproportionately high and adverse for communities of concern.

Hazards and Hazardous Materials

Section 4.9, describes Project impacts related to hazards and hazardous materials. Construction would require limited use and transportation of hazardous substances which could result in major impacts in the event of an accidental spill or release of materials. However, the incorporation of Mitigation Measure HAZ-1, which requires the preparation of a hazardous materials management plan (HMMP) and the preparation of a storm water pollution prevention plan, would reduce the chance of a spill or accidental release of hazardous materials. Additionally, the HMMP would require the preparation of an emergency response plan, which would ensure that in the event of a spill, hazardous materials would not affect adjacent communities.

As described in Section 4.9, Segments 1, 2, and 3 are located in “very high” fire hazard severity zones (FHSZs), Segment 4 is located in a high FHSZ, and Segment 5 is located within an intermixed moderate to high FHSZ. Project construction has the potential to ignite a fire due to sparks from construction equipment and vehicles. Therefore, this increase in risk of wildland fire could result in a major impact on communities located near Project components. Mitigation Measure HAZ-2 requires the preparation and implementation of a construction fire prevention plan (CFPP) that would require fire prevention practices during construction to limit the risk of a wildland fire. As a result, this project would not cause communities near project components to be exposed to substantial additional wildland fire risks. As a result, the Project would not result in hazards and hazardous materials impacts which would be disproportionately high and adverse for communities of concern.

Hydrology

As described in Section 4.10, construction, operation, and maintenance would not result in adverse groundwater supply impacts, nor would it result in wastewater discharges that could affect drinking water supplies or other water bodies. The Project could result in water quality impacts to surrounding communities from the accidental release of water pollutants, during construction and maintenance. However, the preparation of a storm water pollution prevention program, together with APMs WATER-1 and WATER-2, would reduce these impacts by requiring the incorporation of construction site best management practices (BMPs) related to erosion control and spill prevention protocols to prevent wastewater discharges. With the incorporation of these APMs, impacts to water quality would be minor. The Project would not result in disproportionately high or adverse effects on the communities of concern listed above.

Noise and Vibration

As analyzed in Section 4.13, construction and operation of the Project would result in a small, audible increase in ambient noise levels due to the use of construction equipment and generators. The use of construction equipment and the testing of back-up generators would be intermittent. Neither construction activities nor the use of generators used during operation would result in a major impact to ambient noise levels which would cause disruption. The Project would not result in a disproportionately high and adverse effect on communities of concern.

Population and Housing

As analyzed in Section 4.14, construction could result in minimal, temporary population growth. As described in Section 2.10, workers are expected to be housed in McKinleyville, Orick, and Willow Creek during construction; therefore, impacts related to population and housing would be limited to these communities. As construction would only require a limited number of workers and impacts on population and housing would be minor and would not result in disproportionately high and adverse impacts on communities of concern.

Public Services

As analyzed in Section 4.15, construction could result in minimal, temporary increases in demand for police and fire services near project components and within the communities where construction workers are housed. However, impacts on these services during construction are expected to be minimal. During operation, anchor institutions such as local fire and police departments, schools, healthcare facilities, government offices, and Caltrans would receive broadband which could result in a positive impact related to the provision of public services in the Study Area due to the increase in the resources available and connectivity of public services. Therefore, the Project would not result in disproportionately high and adverse impacts on communities of concern.

Recreation

Construction could result in minimal, temporary population growth in McKinleyville, Orick, and Willow Creek, which could result in an increase in use of recreational facilities in the two communities. However, as described in Section 4.16, this increase is not expected to result in or affect the physical deterioration of recreational resources. Therefore, impacts on recreational resources would not be major and would not result in disproportionately high and adverse impacts to communities of concern.

Socioeconomics

As described in the Socioeconomics analysis above, the Project would result in temporary, minor, adverse impacts to the Study Area due to the temporary presence of construction crews in McKinleyville, Orick, and Willow Creek and activities along Project segments. The Project would also result in long term, major, beneficial impacts within Orleans, Weitchpec, Wautec, Johnsons, and Orick. Therefore, the Project would not result in socioeconomic impacts which are disproportionately high and adverse for communities of concern.

Transportation

As described in Section 4.18, construction-related traffic, both from worker commuting and transport of materials, temporarily would increase traffic levels and travel disruption of local roadways and U.S. Highway 101. However, the minimal contribution of fewer than 42 vehicle trips is not expected to degrade the LOS of any local Study Area roadways or U.S. Highway 101. These impacts would not be disproportionately high or adverse for populations within the communities of concern.

Mitigation: None required.

4.17.5 NEPA Alternatives

No-Project Alternative

Under the No-Project Alternative, the Project would not be constructed, operated and maintained, or decommissioned and internet services would generally continue as under existing conditions. Therefore, the No-Project Alternative would have a major, long-term, negative impact on socioeconomics and environmental justice, as communities that are currently unserved and underserved with regard to internet services would remain underserved. Additionally, the anchor institutions that would receive broadband as part of the Project would not receive broadband. As a result, important social institutions and services would continue to have few resources and limited internet connectivity to serve populations in the Study Area.

4.18 Transportation and Traffic

	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
18. TRANSPORTATION AND TRAFFIC—				
Would the project:				
a) Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that would result in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

This section evaluates the potential for the Project to result in transportation and traffic impacts during construction, operation, and maintenance activities. The Study Area comprises the total footprint of the Project, including all roads that would be used by Project-related traffic during construction and maintenance of the Project.

4.18.1 Environmental Setting

The Project would use of state highway and Humboldt County road easements, and would request easements from the National Park Service (NPS) and from Green Diamond Resource Company (GDR) for the use of roads managed by those two entities. The following roadways are used to access each route segment:

- **Segment 1: Orleans to Weitchpec** (15.2 miles). This segment alignment follows State Route (SR) 96 and would include a 0.5-mile spur to serve the offices of the California Department of Transportation (Caltrans) and the Applicant, and spur extensions to the existing Orleans broadband tower and the existing Frontier landline central office in Orleans. In addition to SR 96, public roadways located adjacent to the proposed Segment 1 route and its two associated spurs include Dredge Road, Camp Creek Road, and Weitchpec School Road.
- **Segment 2: Weitchpec to Wautec** (24.2 miles). This segment alignment is located entirely within the Yurok Indian Reservation and would include a 2-mile spur to serve the Yurok Tribe’s Tulley Creek facility. Public roadways located adjacent to the proposed Segment 2 route and its associated spur include SR 96, SR 169, Upper and Lower Cappell Road, McKinnon Hill Road, Weitchpec School Road, and Tulley Creek Road.
- **Segment 3: Weitchpec to Elk Camp** (21.9 miles). This proposed segment extends from the Tulley Creek facility along Bald Hills Road to Elk Camp and would include a 0.1-mile spur

to the Elk Camp Fire Station. Apart from Bald Hills Road, no public roadways are located adjacent to the proposed Segment 3 route and its associated spur.

- **Segment 4: Elk Camp to Orick** (11.8 miles). This segment alignment follows Bald Hills Road from Elk Camp to U.S. Highway 101 (U.S. 101) just north of Orick, then through the town of Orick to the proposed location of a new wireless tower (the Orick Tower). This segment would include spurs connecting to the existing State Parks office (shared with NPS), a proposed new visitor center located at the intersection of Bald Hills Road and U.S. 101, and to the existing Frontier Communications office in Orick. No public roadways apart from Bald Hills Road and U.S. 101 are located adjacent to the proposed Segment 4 route and its associated spurs.
- **Segment 5: Orick to McKinleyville** (31 miles). The alignment for this segment follows U.S. 101 from the proposed Orick Tower, through the town of Orick to the intersection with U.S. 101 and on to McKinleyville. Segment 5 would be located on land managed by Caltrans and Humboldt County. Land uses along Segment 5 include rural residential for 1.5 miles in Orick, commercial forest uses across GDR lands, and rural residential for 4.7 miles from Fieldbrook to McKinleyville along Murray Road and Central Avenue.

SR 96, U.S. 101, Dredge Road, Crannell Road, and Dows Prairie Road are two-lane paved roads in the Study Area, while SR 169, Tulley Creek Road, Weitchpec Road, parts of Bald Hills Road, and Hilton Road are paved or surfaced one-lane roads with wider portions that allow for passing. Upper and Lower Cappell Roads, the middle 7 miles of Bald Hills Road, McKinnon Hill Road, the NPS West Side Access Road, and all GDR roads are graveled one-lane roads with periodic wider areas for passing. The access roads to Antenna Ridge and Orleans Mountain are U.S. Forest Service unpaved single-lane roads with occasional turnouts. The last three-quarter mile of the road to Orleans Mountain is generally accessible only in summer without specialized off-road snow equipment.

Existing traffic levels on state highways in the Study Area are light (Caltrans, 2017a). The annual average daily traffic (ADT) along SR 169 ranges from 200 to 300 vehicles per day, 600–1,000 vehicles per day along SR 96, and 3,900–11,000 vehicles per day along U.S. 101. As a comparison, the ADT for U.S. 101 at Indianola near Eureka is 37,600 and for Interstate 5 in Sacramento at P/Q Street is 193,400. No traffic counts are available for Humboldt County’s local roadways. The Project would be located in a rural, unincorporated area of Humboldt County with low traffic volumes. No roadways in the Study Area are currently identified as operating at an unacceptable level of service (Level of Service [LOS] D, E, or F) (Humboldt County, 2017).

Yurok Tribal Transit Services (YTTS) is a public transportation service operated by the Yurok Tribe Transportation Department under the Yurok Tribal Council. It provides on-demand transit service within the Yurok Ancestral Territory. All members of the general public are welcome to ride aboard the YTTS (Yurok Tribe Planning and Community Development Department, 2018). In addition, Humboldt Transit Authority operates the Redwood Transit System, which provides daily fixed-route transit service to/from Trinidad, at the far southern end of the Study Area, to points farther south (Humboldt Transit Authority, 2018).

Bicycle facilities in Humboldt County are developed and maintained according to the Humboldt County’s (County’s) *Regional Bicycle Plan* (HCAOG, 2018). According to this plan, Caltrans classifies bikeways into four primary classifications: Shared Use Path (Class I Bikeway), Bike Plane (Class II Bikeway), or Bike Route (Class III Bikeway). Class I Bikeways are bike paths with

exclusive right-of-way for use by bicyclists, pedestrians, and in some cases, equestrians. Class II Bikeways are areas designated for one-way bike travel on a street or highway, while Class III Bikeways are signed bike routes that allow bicycles to share the roadway with motor vehicles.

No existing bicycle facilities either intersect or are located immediately adjacent to the proposed locations of Project components. Proposed bikeway projects identified in the *Regional Bike Plan* include bikeways along SR 96 in Hoopa, from Mill Creek Road to Shoemaker Road; Willow Creek, from Scenic Route 299 to Willow Creek Elementary School; Orleans; and on Bald Hills Road between Martin's Ferry and Orick (HCAOG, 2018).

4.18.2 Regulatory Framework

For a discussion of federal, state and local regulations that are relevant to the Project see Appendix F.

4.18.3 Applicant Proposed Measures

The following Applicant Proposed Measures (APMs) related to traffic and transportation have been included as part of the Project:

- **APM GEN -6:** Workers will be encouraged to carpool from housing to the work site each day.
- **APM TRANS-1:** Traffic control measures such as traffic control personnel, warning signs, lights, and barriers will be used during construction as specified in the encroachment permits from road managers to ensure safety and to minimize traffic congestion.
- **APM TRANS-2:** Emergency vehicle access to private property will be maintained during construction.
- **APM TRANS-3:** Roads negatively affected by construction and as identified by the agencies will be returned to preconstruction condition.

4.18.4 Environmental Impacts and Mitigation Measures

- a) **Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities. *Less than Significant; Short-term; Localized; Minor.***

Construction

Construction Workers and Trucks

Construction of the Project would result in minor, temporary increases in ADT along road segments where construction personnel, equipment, and other construction-related trips would access work areas and staging yards. Given the nature of the installation of fiber optic cable, the Project would need multiple work areas and construction traffic would be largely spread out among existing public and private roadways and access roads. Traffic-generating construction activities related to the Project (see Chapter 2, Tables 2-11 through 2-14 for details) would consist of the daily arrival and departure of construction workers to each work site; trucks hauling equipment and materials to the work sites; and the hauling of excavated spoils from, and import of new fill to, certain work sites.

As stated in Chapter 2, Section 2.6.15, approximately 24 construction workers per day would be required to construct the Project at its peak. These workers would be transported to and from various staging areas and worksites using eight crew-cab pickup trucks, resulting in a maximum of 16 one-way trips by construction vehicles daily. In addition, a maximum of five vehicle trips per day were assumed to transport support staff to and from the various staging areas and work sites, resulting in an additional 10 one-way daily vehicle trips. Finally, medium- and heavy-duty trucks would be required to transport materials, such as fiber, concrete, and water, to the various Project work areas. Up to eight round trips by medium- and heavy-duty trucks (16 one-way trips) would be required during the peak of construction activities, which corresponds to the fiber installation phase.

The peak of construction would occur about 1 month after construction startup (estimated at mid-2021). In total, a maximum of 42 one-way vehicle trips (26 worker trips, 16 haul truck trips) would be generated during Project construction activities. These construction-related vehicle trips would be dispersed across multiple staging and laydown areas for the approximately 104 miles of fiber optic cable installation and the Orick Tower construction site; thus, the number of vehicle trips for construction along any given local roadway would be a fraction of the total number of vehicle trips (i.e., less than 25 vehicle trips). However, close to 100 percent of construction vehicle trips would likely use U.S. 101 to access the staging and laydown areas. As noted above under Section 4.18.1, the Project would be located in a rural, unincorporated area of Humboldt County with low traffic volumes. No roadways in the Study Area are currently identified as operating at an unacceptable level of service (LOS D, E, or F) (Humboldt County, 2017). Therefore, the contribution of fewer than 25 vehicle trips associated with construction activities is not expected to degrade the LOS of any local roadways in the Study Area.

According to the *US Route 101 Transportation Concept Report* (Caltrans, 2017b), the segments of U.S. 101 located in the Study Area (Segments 16 and 17) currently operate at LOS A or B. On U.S. 101, the contribution of Project-generated construction vehicle trips would represent an increase in ADT of as much as 1.1 percent. This nominal increase in ADT attributable to construction of the Project would not degrade the LOS of U.S. 101.

In summary, the addition of construction-related trips would result in a less-than-significant and minor impact on the performance of study roadway segments.

Disruptions to Roadway Travel

As discussed in Chapter 2, *Project Description*, fiber optic cable would be installed either overhead (using existing and/or new utility poles) or underground (microtrenching, directional drilling, trenching). Most work for overhead installation adjacent to roadways would be conducted from the pavement or shoulder of the road using a bucket truck, which would require traffic control. Traffic control would conform to the permit requirements of each transportation or road agency. Depending on the type of underground installation, roadway disturbances could include mid-lane pavement cuts where traffic is minimal, or cuts at the edge of the pavement (microtrenching), drilling from the shoulder (directional drilling), or trenching in the shoulder or existing road drainage ditches. Where roads are too narrow to allow the ditching equipment to operate off the travel way, a traffic plan (see below) would be filed with the appropriate road agency, and traffic controls would be used to protect construction workers and the traveling public. Traffic would be subject to delays of up to 20 minutes and would be allowed through the work zone when safe.

Because much of the Project would occur along roadways, appropriate traffic control measures would be required to ensure public and worker safety. These measures would include the installation of temporary signage to warn travelers of construction even in areas where work would be conducted in roadside shoulders. Where equipment must occupy part of a lane, some lane closures would be required. Flaggers would be used for lane closures to facilitate traveler safety. Pilot cars are not anticipated to be required during project construction. As shown in Section 4.18.3, APMs stipulate that all traffic control would conform to the permits issued by road managers (APM TRANS-1). Additional measures stipulate that access for emergency vehicles be available during construction at all times (APM TRANS-2). Traffic control would be conducted from a standard pickup that would carry and deploy signs, cones, and flagging stations, and would be staffed by up to three people to set signs and conduct flagging operations, as needed.

Construction of the Orick Tower would require constructing a poured concrete foundation and tower sections brought to the site. Once all tower sections are on-site, a construction crane would lift and place each section of the tower. The Orick Tower would be constructed away from public roadways and therefore would not require any traffic control during tower installation.

In summary, with the implementation of APMs, impacts related to disruptions to roadway travel on Study Area roadways would be less than significant and minor.

Mitigation: None required.

Operations

As noted in Chapter 2, operation and maintenance of the Project would require very little routine maintenance. Should the fiber optic cable be severed or damaged, a repair crew of three to five workers using bucket trucks (for overhead cable) or excavating equipment (for underground cable) would be immediately dispatched to find and repair the damage. In addition, maintenance of the proposed Orick Tower's (propane-fueled) generator would be performed once a week for 12 minutes by one crew member. Based on the propane tank capacity and the anticipated full load demand, fuel deliveries from local vendors could occur up to two times per week. Overall, operation and maintenance of the Project would not result in a perceptible increase in traffic, and the impact on all study roadway segments would be less than significant and minor.

Mitigation: None required.

b) Conflict or be inconsistent with CEQA Guidelines 15064.3, subdivision (b). *Less than Significant; Short-term; Localized; Minor.*

State CEQA Guidelines Section 15064.3(b) was adopted in December 2018 by the California Natural Resources Agency. These revisions to the State CEQA Guidelines' criteria for determining the significance of transportation impacts focus primarily on projects within transit priority areas, and shift the focus from driver delay to reduction of greenhouse gas emissions, creation of multimodal networks, and promotion of a mix of land uses. The revisions required lead agencies to evaluate transportation impacts based on vehicle miles traveled (VMT) beginning July 1, 2020. VMT is a measure of the total number of miles driven to or from a development and is sometimes expressed as an average per trip or per person. Humboldt County has not yet adopted or put into practice VMT-based transportation significance thresholds.

The State CEQA Guidelines update became effective December 28, 2018. As part of the update, Section 15064.3 was added to the State CEQA Guidelines to provide guidance for determining the significance of transportation impacts. Section 15064.3 provides the following criteria for determining a project's transportation impacts. These criteria were used to evaluate Project impacts in the absence of more specific guidance from Humboldt County.

(1) *Land Use Projects.* Vehicle miles traveled (VMT) exceeding an applicable threshold of significance may indicate a significant impact. Generally, projects within one-half mile of either an existing major transit stop or a stop along an existing high-quality transit corridor should be presumed to cause a less-than-significant transportation impact. Projects that decrease VMT in the project area compared to existing conditions should be presumed to have a less-than-significant transportation impact.

(2) *Transportation Projects.* Transportation projects that reduce, or have no impact on, VMT should be presumed to cause a less-than-significant transportation impact. For roadway capacity projects, agencies have discretion to determine the appropriate measure of transportation impact consistent with CEQA and other applicable requirements.

(3) *Qualitative Analysis.* If existing models or methods are not available to estimate the VMT for the particular project being considered, a lead agency may analyze the project's VMT qualitatively. Such a qualitative analysis would evaluate factors such as the availability of transit, proximity to other destinations, etc. For many projects, a qualitative analysis of construction traffic may be appropriate.

(4) *Methodology.* A lead agency has discretion to choose the most appropriate methodology to evaluate a project's VMT, including whether to express the change in absolute terms per capita per household or in any other measure. A lead agency may use models to estimate a project's VMT and may revise those estimates to reflect professional judgment based on substantial evidence. Any assumptions used to estimate VMT and any revisions to model outputs should be documented and explained in the environmental document prepared for the project.

Because the Project is not a land use or transportation project or a project that would generate VMT on a regular basis, criteria 1 and 2 are not applicable. Therefore, a qualitative analysis of transportation impacts is provided.

As described above in response to question a), Project construction would require worker vehicle trips and truck haul trips, which generate VMT. Project operation would generate very few worker vehicle and truck haul trips, meaning that increases in VMT during Project operation would be minimal. Given the rural nature of the Project location, the VMT for Project construction and operation would be comparable to other rural uses in Humboldt County. Workers employed in rural areas of the county typically use strategies to reduce their reliance on single-occupancy vehicles and thus reduce their commute costs, such as using vanpools and carpools. It would be reasonable to expect that workers needed for the Project would employ similar strategies that would also have the co-benefit of reducing VMT. Also, carpooling would be encouraged during construction, where possible (APM GEN-6).

Because the Project does not have any characteristics that would result in greater VMT than other labor intensive uses in Humboldt County (e.g., farming), the Project would not conflict with or be

inconsistent with State CEQA Guidelines Section 15064.3(b). This impact would be less than significant and minor.

Mitigation: None required.

c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that would result in substantial safety risks. *No Impact; None.*

Federal law requires the FAA to determine whether a structure that is proposed to be built or altered, and is 200 feet above ground level or higher or near an airport, does not pose a hazard to the airspace. None of the Project structures or equipment used to construct the Project would be taller than 200 feet. Helicopters would not be used during construction. The Project would primarily involve installation of fiber optic cables that would be buried underground or strung on existing or newly constructed utility poles. New utility poles, similar to existing utility poles, would be made of wood and would be less than 60 feet tall.

The tallest Project component would be the Orick Tower, which would be 90 feet tall and would be erected near the town of Orick. The nearest public airports to the town of Orick are the Andy McBeth Airport, approximately 16 miles to the north in Klamath; and the California Redwood Coast–Humboldt County Airport, about 22 miles south in McKinleyville. Given the long distance between the nearest airports and the proposed Orick Tower, flight paths would not be obstructed. Therefore, under this criterion, no impact would occur.

Mitigation: None required.

d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment). *Less than Significant; Short-term; Localized; Minor.*

The Project would not alter the permanent configuration (alignment) of area roadways, and would not introduce types of vehicles that do not already travel on area roads. The proposed fiber optic cables would be buried underground or hung on overhead utility poles such that they would not be anticipated to be a hazard to motorists. However, construction zones in the public right-of-way and heavy equipment operating adjacent to or within a road right-of-way would increase the potential for accidents.

As noted previously, for some construction activities, it may be necessary to close one traffic lane. In general, any lane or shoulder closures would be short term and would occur only during construction hours. Operation of construction equipment on or near the roadway and/or temporary closure of a traffic lane could potentially increase hazards for other motorists. Conflicts also could occur between construction traffic and alternative modes of transportation (e.g., bicyclists and buses).

As stated previously in response to question a), APMs stipulate that all traffic control during construction of the Project would conform to the permits issued by road managers (APM TRANS-1). Additional measures stipulate that access for emergency vehicles be made available during construction at all times (APM TRANS-2). Traffic control would be conducted from a standard pickup that would carry and deploy signs, cones, and flagging stations, and would be staffed by up to three people to set signs and conduct flagging operations, as needed.

Furthermore, once construction activities have ceased, any roads negatively affected by construction would be returned to preconstruction condition (APM TRANS-3). With implementation of these APMs, the impact related to potential temporary roadway hazards caused by construction activities would be less than significant and minor.

Mitigation: None required.

e) Result in inadequate emergency access. *Less than Significant; Short-term; Localized; Minor.*

Emergency service providers in the Study Area include North Coast Emergency Medical Services in Eureka; the U.S. Forest Service; NPS; the California Department of Forestry and Fire Protection; and multiple local volunteer fire departments including the Orick Volunteer Fire Department, Orleans Volunteer Fire Department, Yurok Tribe Volunteer Fire, and Wautec Fire House. Further detail on emergency service providers is provided in Section 4.15.

The Project would result in temporary effects on traffic flow, particularly with fiber-optic cable construction within a road right-of-way. Construction activities within or across streets could result in delays for emergency vehicle access. However, as stated previously in response to question a), APM TRANS-2 stipulates that access for emergency vehicles be provided at all times during construction activities. Therefore, the impact on emergency vehicle access would be less than significant and minor.

Mitigation: None required.

f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities. *Less than Significant; Short-term; Localized: Minor.*

The Project would not result in any long-term impact on demand for alternative transportation or on alternative transportation facilities (i.e., for transit and bicyclists). As noted in Section 4.18.1, there are no bicycle facilities on Study Area roadways, nor is any fixed-route public transit service provided on any roadways along the proposed five proposed route segments. Local school buses and on-demand public transit operated by the YTTS may be subject to disruptions caused by fiber-optic cable construction along Study Area roadways; however, as stipulated to address the presence of other vehicular traffic on those roadways, APM TRANS-1 (see discussion above in response to question a) would implement traffic control measures such as the use of traffic control personnel, warning signs, lights, and barriers to ensure safety and minimize traffic congestion. With implementation of this measure, any potential impacts on public transit, bicycle, and/or pedestrian facilities are anticipated to be less than significant and minor.

Mitigation: None required.

4.18.5 NEPA Alternatives

No-Project Alternative

Under the No-Project Alternative, the Project would not be constructed, operated, and maintained, and internet service would generally continue as under existing conditions. Therefore, under the No-Project Alternative, no impact on transportation and traffic would occur.

4.19 Utilities and Service Systems

	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
19. UTILITIES AND SERVICE SYSTEMS—Would the project:				
a) Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c) Result in a determination by the wastewater treatment provider that would serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

This section addresses the potential impacts of Project construction, operation, and maintenance on water, wastewater, and solid waste disposal systems. The Study Area for this analysis was defined as the Project Area as well as the surrounding utility and service networks.

4.19.1 Environmental Setting

The Project would consist of placement of fiber optic cables in both aboveground and subsurface installations along public roads and private lands in a sparsely populated region of rural Humboldt County. Additional Project components would include installation of a wireless communication tower in Orick, a wireless signal transmission facility, and last-mile components for delivery of high-speed broadband to individual anchor institutions, businesses, and area residences.

Water and Wastewater Services

Humboldt County

According to the Humboldt County General Plan, 17 cities and special districts in Humboldt County provide wastewater services. Of these, 14 operate wastewater collection systems and treatment plants, and three operate only collection systems. Three privately owned systems in company towns, not regulated by the California Public Utilities Commission (CPUC), are transitioning to municipal systems. The remainder of the county, including most of the

communities in the Study Area, are served by on-site septic systems. Nearly all wastewater service providers in the county also provide water service, in addition to water service provided by other entities such as cities, special districts, and public utility companies (Humboldt County, 2017).

Solid Waste and Recycling

Humboldt Waste Management Authority

The Humboldt Waste Management Authority (HWMA) comprises unincorporated Humboldt County and the cities of Arcata, Blue Lake, Eureka, Ferndale, and Rio Dell, and oversees waste management of landfills, transfer centers, and recycling facilities (HWMA, 2018a). There are currently no permitted landfills in the Project vicinity (CalRecycle, 2018). The closest landfill to the project is the West Central Landfill in Redding, approximately 95 miles southeast of McKinleyville. The former Cummings Road Landfill was officially closed in 2001. Humboldt Sanitation operates numerous small transfer stations in remote Humboldt County, accepting residential, commercial, construction, e-waste, and green waste. McKinleyville, Orick, Orleans, and Weitchpec have transfer centers able to accept recyclables and nonhazardous waste.

Solid waste and contaminated soils in the region is now routed to HWMA's Hawthorne Street Eureka Transfer Station, located at 1059 West Hawthorn Street in Eureka. This transfer station receives more than 60,000 tons of municipal solid waste annually from residents throughout Humboldt County (HWMA, 2018a). HWMA also maintains the Eureka Recycling Center, adjacent to the Hawthorne transfer station. This facility accepts scrap metal, chipboard, soils, containers with redemption value, appliances, and recyclable electronic waste. Although the facility requests that appliances, hazardous, and recyclable materials be separated out from solid wastes, there are no quantitative limits on the amount of wastes the facility will accept (for a fee).

Solid waste collected at the Eureka Transfer Station is ultimately shipped roughly 145 miles north to the Dry Creek Landfill in White City, Oregon (HWMA, 2018b). The Dry Creek Landfill accepts solid waste and hazardous waste, including contaminated soils. This facility was expanded in 1999 and has a projected operational life exceeding 100 years (Rogue Disposal and Recycling, 2018).

4.19.2 Regulatory Framework

For a discussion of federal, state and local regulations that are relevant to the Project see Appendix F.

4.19.3 Applicant Proposed Measures

The following Applicant Proposed Measures (APMs) related to utilities and service systems have been included in the Project:

- **APM REC-1: Final Cleanup:** Final Cleanup will ensure that all construction areas are free of any construction debris including, but not limited to: assembly scrap metals, oil or other petroleum based liquids, construction wood debris, and worker generated litter. Permanent erosion control devices will be left in place.

- **APM SOIL-1:** Disturbance of soils and vegetation removal will be limited to the minimum area necessary for access and construction.
- **APM WATER-2:** Construction industry standard practices and BMPs will be used for spill prevention and containment.
- **APM WET-2:** Where impacts on wetlands are not avoidable, site specific crossing plans and measures to mitigate impacts will be submitted to the appropriate regulatory agency, as well as the land managing agency. The Karuk Tribe will obtain all necessary permits prior to discharging dredged or fill material to the waters of the U.S. and state.
- **APM WET-3:** If trench dewatering is needed, it will be completed per the Caltrans [California Department of Transportation] BMP NS-2 specifications and Field Guide to Construction Site Dewatering.

4.19.4 Environmental Impacts and Mitigation Measures

- a) **Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects. *Less than Significant; Localized; Minor.***

During construction, water would be used for dust control and during horizontal directional drilling to facilitate installation of the fiber optic broadband cables in subsurface locations where soil disturbance is required. During drilling/boring operations, drilling fluid composed of water and bentonite clay, along with non-petroleum emulsifiers or lubricants, would provide a medium for removal of earth cuttings. Construction industry–standard practices and BMPs would be implemented to contain the residual mud, per APM WATER-2. A vacuum truck would be on hand to remove the spoils and intercept spillage, and for trench dewatering, if required. Following the directional drilling procedures and trench dewatering (if used), wastes would be transferred to an approved disposal site in accordance with relevant federal, state and local requirements (as outlined in Section 2.6).

Installation of fiber optic cables could result in discharges of sediment into waterways, as trenching and other underground construction would be implemented in some segments of the Project. However, per APM SOIL-1, disturbance of soils and vegetation removal would be limited to the minimum area necessary for access and construction. Implementation of this measure would support an approach to limit disturbance, and thereby limit site runoff (discharges). Moreover, a SWPPP would be prepared, and all proposed construction activities would comply with the terms of the Project’s Construction General Permit such that no violations of wastewater treatment requirements under the RWQCB’s NPDES program would occur. Additionally, per APM REC-1, a final cleanup for the Project sites would ensure that the areas would be free of any construction debris, and permanent erosion control devices would remain in place. With implementation of the above described APMs and development of a SWPPP, the impacts related to construction, operation, and maintenance of the Project would be less than significant and minor.

Mitigation: None required.

- b) Have sufficient water supplies available to serve the project and reasonable foreseeable future development during normal, dry and multiple dry years. *No Impact; None.***

The Project would not require water or water treatment facilities for operation or maintenance. Construction of the Project would require an estimated 275,342 gallons of water, which would be purchased from municipal sources, and/or withdrawn from approved sources, as available. This water would be used solely for construction; therefore, no long-term entitlements would be required. Therefore, under this criterion, no impact would occur.

Mitigation: None required.

- c) Result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments. *No Impact; None.***

The Project would not require or include construction of new water or wastewater treatment facilities or expansion of existing facilities. During construction, it is anticipated that portable toilets would be provided for workers, and waste would be hauled to an approved facility for treatment/disposal. The temporary demand associated with the treatment and disposal of this wastewater would not exceed the treatment capacity of one of the many wastewater treatment facilities in Humboldt County capable of receiving sanitary waste. Therefore, under this criterion, no impact would occur.

Mitigation: None required.

- d) Generate solid waste in excess of State or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals. *Less than Significant; Short-term; Localized; Minor.***

Solid waste generated during construction, including an estimated 237 cubic yards of drilling spoils and other (nonrecyclable) construction debris, would be transferred to the nearest solid waste transfer site, which is located in Eureka, approximately 15 miles south of the Project. The Humboldt Waste Management Authority ships solid waste from the Eureka Transfer Center to the Dry Creek Landfill in southern Oregon, which has sufficient permitted capacity to accept the volume of waste generated by the Project. Impacts regarding the accommodation of solid waste would be less than significant and minor.

Mitigation: None required.

- e) Comply with federal, state, and local management and reduction statutes and regulations related to solid waste. *No Impact; None.***

Construction of the Project would include generation of solid waste, including mud spoils from directional drilling operations, and other construction debris such as scrap metal and wood debris. Per APM REC-1, a final cleanup of the construction sites would be performed, and such debris would be removed from the area after construction. The Project would be required to comply with all applicable local statutes and regulations. Consistent with the California Integrated Waste

Management Act of 1989, the Project would recycle or otherwise reuse materials, where feasible. Therefore, under this criterion, no impact would occur.

Mitigation: None required.

4.19.5 NEPA Alternatives

No-Project Alternative

Under the No-Project Alternative, the Project would not be constructed, operated and maintained, and internet services would generally continue as under existing conditions. Underserved communities would not become connected through the Project's fiber optic broadband system. Utilities and service systems would not become connected through the Project. Therefore, the No-Project Alternative would have no effect on utilities and services systems, nor would the No-Project Alternative serve the objectives of providing internet connectivity to these communities and anchor institutions.

4.20 Wildfire

	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
20. WILDFIRE — If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
a) Substantially impair an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b) Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

For the purposes of this analysis of wildfire risk, the Study Area is defined as the area comprising all Project components, as well as areas that would be subject to either temporary or permanent disturbance as a result of the Project or used for the transportation of materials, equipment, and workers.

4.20.1 Environmental Setting

Fire Protection Services and Planning Areas

The Project alignment would be located in a Local Responsibility Area (LRA), State Responsibility Area (SRA), and Federal Responsibility Areas (FRAs). LRAs include incorporated cities and densely populated areas. Fire protection in these areas is typically provided by city fire departments, fire protection districts, and counties, and by the California Department of Forestry and Fire Protection (CAL FIRE) under contract to local governments. An SRA is the official boundary where the State of California (through CAL FIRE) has primary legal and financial responsibility for the prevention and suppression of wildland fires. Within FRAs, the state is not financially responsible for wildland fire protection, as this responsibility falls on the federal government (CAL FIRE, 2007).

As discussed in Section 4.15, wildland fire protection is provided through the coordinated efforts of the U.S. Forest Service, the National Park Service, the Applicant, the Yurok Tribe, and CAL FIRE. Local fire protection is provided by several fire services including the Hoopa Fire Department, Hoopa Volunteer Fire and Rescue, Yurok Volunteer Fire Company, Orick Volunteer Fire Department, and Orleans Volunteer Fire Department. Many areas outside of established district boundaries receive fire protection from a volunteer fire company not affiliated with districts. The Humboldt County Fire Chiefs' Association has been working to increase the level of service

through coordination, communication, standardization, and support (Humboldt County Fire Chiefs' Association, 2018). As described in Section 4.15, the Yurok Tribe has a tradition of fire management. Despite approximately a century of fire suppression practices introduced by western land managers, current tribal forest managers are returning traditional practices for management through the Yurok Tribe's Forestry Department. Each of these fire protection agencies is described in more detail in Section 4.15.1.

The Humboldt County Community Wildfire Protection Plan (CWPP) (described in more detail in Section 4.20.2) was developed by the Humboldt County Fire Safe Council (HCFSC) to integrate planning and risk assessment in Humboldt County to prevent human-caused wildfire ignitions and increase wildfire resiliency and preparedness. The HCFSC was developed by the Humboldt County Board of Supervisors during the general plan update process to create the CWPP. The planning process that led to the CWPP was intended to create a collaborative document to be used by fire protection practitioners and community members. The CWPP serves as a planning tool for local fire departments, federal and state fire protection agencies, the public, and others to facilitate the identification of wildfire risks and prioritization of mitigation efforts.

To implement a countywide action plan, the CWPP divided Humboldt County into distinct planning units. The Project is located within five of the CWPP planning units: the Humboldt Bay Area (Unit 8), Trinidad (Unit 5), Orick–Redwood Park (Unit 1), Upper Yurok Reservation (Unit 2), and Mid Klamath (Unit 3).

California Department of Forestry and Fire Protection Hazard Severity Zones

CAL FIRE has adopted Fire Hazard Severity Zone (FHSZ) mapping for SRAs throughout the state. These maps rate wildfire hazards as “moderate,” “high,” or “very high” based on fuel loading, slope, fire weather, and other relevant factors. As described in Section 4.9, the project alignment passes through moderate, high, and very high FHSZs (CAL FIRE 2009; CAL FIRE, 2012).

California Public Utilities Commission–Designated Wildfire Hazard Zones

In response to the California Public Utilities Commission's (CPUC's) Fire Safety Rulemaking (R.15-05-006), CPUC mapped high-fire-threat areas where more stringent inspection, maintenance, vegetation clearance, and wire clearance requirements (as required by CPUC General Orders [GOs] 95, 165, and 166, described in Section 4.20.2, below) would be implemented because of the elevated risk for power line fires. CPUC's High Fire Threat District Map identifies three tiers of elevated risk for fires associated with utilities (CPUC, 2017a). As illustrated in Figure 4.9-1, the Project alignment passes through a CPUC Tier 2 district (CPUC, 2019).

Fire Environment

Climate

The climate of Humboldt County is relatively mild and receives considerable precipitation. The Pacific Ocean creates cool, stable temperatures along the coast that do not vary significantly from summer to winter. Temperatures are typically 10 degrees warmer in the summer months and precipitation is considered negligible during the summer. Because of the area's mild temperatures, the influence of coastal fog, and precipitation, average relative humidity is generally high.

Humboldt County's fire season is generally considered to be June to October. Because of climatic differences between the eastern and western parts of the county, the western or coastal areas of Humboldt County typically have shorter wildfire season than the county's eastern side (HCFSC, 2019). Certain weather patterns in Humboldt County that are atypical for the county, but are more common during the summer, are particularly associated with elevated fire risk. These patterns can produce warm, dry east winds (called "foehn winds") that displace the cool marine air mass off the coast, resulting in high temperatures and low humidity. On these days, large fires are much more likely to occur or to spread rapidly. These patterns generally occur 50–55 days in the summer months, with the greatest number of days in July, August, and September (HCFSC, 2019; CAL FIRE, 2020). Normal wind patterns in the Project vicinity are west to southwest winds in the afternoon, with a significant upriver wind in the afternoon in the Redwood Creek and Klamath River drainages (CAL FIRE, 2020).

Topography and Vegetation/Fuels

The Project alignment traverses the county from the coast to the more rugged, mountainous areas of Waitec, Weitchpec, and Orleans. The Study Area covers a variety of topography and fuel types. Elevations in the Study Area range from sea level to more than 3,000 feet above sea level near French Camp Ridge. Along the alignment of Segment 5, the topography ranges from flat to hilly. This portion of the Project includes the following fuel models, which were mapped as part of the CWPP: grass and light hardwood/conifer.

According to the CWPP, annual and perennial grasses can result in surface fires that move rapidly through the landscape and can result in flames approximately 4 feet long. The light hardwood/conifer fuel model includes mostly needles, leaves, and some twigs below a conifer or hardwood canopy. This fuel model has less of an understory than other timber litter models; therefore, fires in this model tend to burn more slowly and at a low intensity. However, fires in this model can encounter a heavy fuel concentration and flare up. Generally, fires in this fuel model do not pose a control threat unless they spread as a result of high temperatures, low relative humidity, and high winds. Fires in this fuel type can produce flames about 2 feet tall (HCFSC, 2019).

Generally, the fuel models present in this portion of the Project alignment are likely to result in slower burning, lower intensity fires than other fuel models common in Humboldt County such as medium conifer, heavy conifer, and pine/grass (HCFSC, 2019).

Project Segments 1, 2, 3, and 4 are located farther inland. Segments 1 and 2 travel primarily alongside the Klamath River and are surrounded by steep river valley walls. Segments 3 and 4

traverse steeper, more rugged terrain. Surrounding all of these segments, the topography is relatively steep. Surface fuels along the inland segments are primarily light hardwood/conifer (Fuel Model 8), along with small portions of medium conifer (Fuel Model 9), heavy conifer (Fuel Model 10), and grass (Fuel Model 1) in the project vicinity. As described above, the light hardwood/conifer fuel model has less of an understory than other timber litter models; therefore, fires in this model tend to burn more slowly and at a low intensity. The medium conifer fuel model has more fine fuels than the light hardwood/conifer fuel model. Medium conifer fuels can lead to high rates of fire spread, as well as fire behavior such as torching, crowning, and spotting. The heavy conifer fuel model consists of a closed canopy and a thick, lush understory with large amounts of biomass. These fuel models can present a fire control problem and can result in burns with a moderate rate of spread that can be very intense (HCFSC, 2019). As described in Section 4.15, Public Services, the Yurok Tribe has a tradition of fire management for the purposes of maintaining the landscape for resource gathering, and for maintaining open prairies fuel breaks around homes and villages.

Impact of Wildfire on Air Quality

As wildfires burn fuel, large amounts of carbon dioxide, black carbon, brown carbon, and ozone precursors are released into the atmosphere. Additionally, wildfires emit a substantial amount of volatile and semi-volatile organic materials and nitrogen oxides that form ozone and organic particulate matter. These emissions can lead to harmful exposures for first responders, nearby residents, and populations in regions that are farther from wildfire (NOAA, 2018). Exposure to these pollutants can cause asthma attacks, coughing, and shortness of breath. Chronic exposure to these pollutants can increase the risk of developing chronic health conditions such as heart disease, diabetes, and cancer (Hamers, 2018; Milman, 2018). These pollutants are described in more detail in Section 4.3.

As discussed in the Humboldt County Local Hazard Mitigation Plan, Humboldt County is prone to temperature inversions, which occur when a layer of warm air traps cool air near the surface and creates a lid that inhibits the dispersion of smoke and other pollutants. This phenomenon makes Humboldt County especially susceptible to the air quality impacts of smoke. The State of California's first air quality-related state of emergency occurred during the Megram Fire in late August through early November 1999. During this fire, schools were closed and residents were encouraged to leave because of the impact of smoke (Humboldt County, 2014).

Historical Fire Regime

According to the Humboldt–Del Norte Unit Strategic Fire Plan, in Battalion 4 in 2017, approximately 35 percent of ignitions were caused by arson or undetermined causes. Debris burning caused 28 percent of ignitions and vehicles caused 21 percent of ignitions. Arson resulted in 14 percent of ignitions within Battalion 3. Electrical power was the cause of two ignitions (approximately 5 percent of ignitions) and equipment use accounted for four ignitions (9 percent of ignitions) in Battalion 4 in 2017 (CAL FIRE, 2020).

Fire regime refers to the historic natural occurrence, variability, and influence of fire on vegetation in landscapes (USFS, 2019). A *fire regime classification* describes the frequency and

severity of historical natural fires. According to CAL FIRE, most of the Project site is located in Fire Regime 1, or a 0- to 35-year frequency of low-severity fires (HSFSC, 2019).

Future Fire Regime

As the large-scale fires throughout Northern and Southern California in 2017 and 2018 demonstrated, fires are becoming larger and more destructive and massive quick-spreading fires are becoming more frequent (Syphard, 2018). Wildfire trends in the western United States were discussed in the Fourth National Climate Assessment (USGCRP, 2018):

Wildfire trends in the western United States are influenced by rising temperatures and changing precipitation patterns, pest populations, and land management practices. As humans have moved closer to forestlands, increased fire suppression practices have reduced natural fires and led to denser vegetation, resulting in fires that are larger and more damaging when they do occur. Warmer winters have led to increased pest outbreaks and significant tree kills, with varying feedbacks on wildfire. Increased wildfire driven by climate change is projected to increase costs associated with health effects, loss of homes and other property, wildfire response, and fuel management.

Historically, the fire season in Humboldt County was considered to be from June to mid-October; however, it is expected to be longer in the future. Additionally, it is generally expected that weather patterns in Humboldt County will become more extreme, the tempering effect of marine influence will be reduced, and forest fires are expected to be more frequent and larger (HCFSC, 2018). Many factors contribute to these changes: long-term drought, changes in vegetation type and fuel loading, changing temperatures and meteorological conditions, more homes in the wildland-urban interface, and increases in the numbers of human-caused ignitions. Together, these climatic changes and human-driven changes are shifting the fire regime in Humboldt County and California as a whole.

Emergency Response

The Humboldt County Office of Emergency Services (OES) is the primary local coordination agency for emergencies and disasters affecting residents, public infrastructure, and government operations in the county. The Humboldt County OES provides emergency response from the Emergency Operations Center using the Incident Command System (Humboldt County, 2019).

The Humboldt County Emergency Operations Plan establishes roles, responsibilities, and procedures for emergency management in the event of an emergency or disaster. The plan notes that emergency or evacuation routes would depend on the nature and location of the emergency or disaster. The Emergency Operations Plan does not identify specific emergency response or evacuation routes (Humboldt County, 2015). Although official evacuation routes are not identified in the CWPP, the plan notes that U.S. Highway 101 would likely be used in the event of an evacuation, along with smaller local roads (Humboldt County, 2019).

4.20.2 Regulatory Framework

For a discussion of federal, state and local regulations that are relevant to the Project see Appendix F.

4.20.3 Applicant Proposed Measures

The following Applicant Proposed Measures (APMs) related to wildfire have been included as part of the Project:

- **APM FIRE-1:** Before the start of construction, the Applicant's Construction Contractor will prepare a project-specific Construction Fire Prevention Plan (CFPP) to ensure the health and safety of construction workers and the public from fire-related hazards. Local fire departments shall be consulted during plan preparation and the CFPP will include fire safety measures as recommended by these departments. The CFPP shall list fire prevention and extinguishment procedures and specific emergency response and evacuation measures that would be followed during emergency situations. The CFPP also would provide smoking and fire-related rules, storage, and parking areas, require usage of spark arrestors on construction equipment, and fire-suppression tools and equipment. The CFPP shall include, but not be limited to, the following:
 1. Water tanks, water trucks, or portable water backpacks (where space or access for a water truck or water tank is limited) will be sited/available in the Project area for fire protection where fire hydrants are not available.
 2. All construction vehicles shall have fire suppression equipment.
 3. All construction workers shall receive training on the proper use of fire-fighting equipment and procedures to be followed in the event of a fire.
 4. As construction may occur simultaneously at several locations, each construction site shall be equipped with fire extinguishers and fire-fighting equipment sufficient to extinguish small fires.
 5. Construction personnel shall be required to park vehicles away from dry vegetation.
 6. Prior to construction, contact and coordinate with the appropriate fire departments to determine the appropriate amounts of fire equipment to be carried on the vehicles and appropriate locations for the water tanks, water trucks, and/or water backpacks. The Applicant shall submit verification of its consultation with the appropriate fire departments to the CPUC.
 7. The CFPP shall be submitted to CPUC prior to commencement of construction activities and shall be distributed to all construction crew members prior to construction of the Project.
 8. Cease work during Red Flag Warning events in areas where vegetation would be susceptible to accidental ignition by Project activities (such as welding or use of equipment that could create a spark). During Red Flag Warning events all non-emergency construction and maintenance activities will cease in affected areas.
- **APM TRANS-1:** Traffic control measures such as traffic control personnel, warning signs, lights, and barriers will be used during construction as specified in the encroachment permits from road managers to ensure safety and to minimize traffic congestion.
- **APM TRANS-2:** Emergency vehicle access to private property will be maintained during construction.

4.20.4 Environmental Impacts and Mitigation Measures

a) **Substantially impair an adopted emergency response plan or emergency evacuation plan. *Less than Significant; Short-term; Localized; Minor.***

As described in detail in Section 4.9, response to question f), and Section 4.18, response to question 3), the Project would have a less-than-significant and minor impact on emergency response, evacuation plans, and emergency access during construction and operation.

As described in Section 4.20.1, the Humboldt Emergency Operations Plan does not designate specific evacuation routes. Major highways and local roads are identified as primary evacuation routes in the CWPP. As described in Section 4.18, Project construction would result in temporary effects on traffic flow. Construction activities could result in delays for emergency vehicle access; however, APM TRANS-2 stipulates that access for emergency vehicles be provided at all times during construction. Additionally, APM TRANS-1 requires the implementation of traffic control measures to minimize congestion and maintain emergency vehicle access. These measures would ensure that Project construction would not have a significant direct or indirect impact on emergency response and evacuation.

As described in Section 4.9, Project operation and maintenance would not affect any adopted emergency response or evacuation plan. The Project has the potential to improve the implementation of emergency response by providing broadband infrastructure to emergency responders and anchor institutions. Communication during emergency response may benefit as a result of Project implementation. Therefore, Project operation would no adverse impact under this criterion.

As described in Section 4.20.2, the 2019 Strategic Fire Plan for California outlines overarching goals for CAL FIRE and the 2020 Humboldt–Del Norte Unit Strategic Fire Plan identifies strategies for unit implementation of the statewide plan. Because these plans are not directly applicable to the Project, the Project would not conflict with or impair implementation of the 2019 Strategic Fire Plan for California.

As described in Section 4.20.2, the Humboldt County Emergency Operations Plan outlines a general structure for Humboldt Area emergency responders in the event of an emergency in the county. The plan does not establish any specific evacuation routes or plans, standards, goals, or policies. Therefore, the Project would not conflict with implementation of the Humboldt County Emergency Operations Plan.

The Project would not conflict with any emergency response plan or emergency evacuation plan, and impacts would be less than significant and minor.

Mitigation: None required.

b) **Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire. *Less than Significant; Moderate.***

The Project structures are not intended for and would not be used for occupation; therefore, no occupants would be exposed to increased risks associated with wildfire. However, Project

segments do pass through existing communities. Therefore, the following analysis focuses on the potential for Project construction and operation to increase the exposure of these communities to wildfire risks.

Construction

As discussed in Section 4.20.1, the Project alignment would pass through moderate, high, and very high FHSZs. As described in Section 4.9, the “very high” FHSZ encompasses portions of Segments 1, 2, and 3, which correspond to the town of Orleans, State Route 169 up to Wautec, and along Bald Hills Road, respectively. Segment 4 is within a high severity zone and Segment 5 is within intermixed moderate to high FHSZs (see Figure 4.9-1). Additionally, the Project alignment would pass through an area designated as a CPUC Tier 2 HFTD.

The primary fire hazards from Project construction would involve the use of vehicles and equipment. Heat or sparks from construction vehicles and equipment could ignite dry vegetation and cause a fire, particularly during the drier, warmer conditions from June to October. Additionally, construction activities that could result in sparks, such as welding or grinding, have a greater likelihood of creating a source of ignition. For example, the Ranch Fire in 2018 was determined by CAL FIRE to have been caused by an individual hammering a metal stake into concrete (*Sacramento Bee*, 2019). Therefore, depending on the time of year (as seasonality may affect climate conditions, prevailing winds, and vegetation/fuels) and the location of construction activities, the increase in sources of potential ignition associated with Project construction could exacerbate the risk of wildfire in the area.

As discussed in Section 4.20.1, wildfires release large amounts of air pollutants, which can lead to harmful exposure for first responders, nearby communities, and populations that are located farther away. Because of the increase in potential sources of ignition, Project construction could increase the risk of surrounding communities’ exposure to pollutant concentrations from wildfire and the uncontrolled spread of wildfire, which would result in a potentially significant and major impact.

As described in Section 4.9, APM FIRE-1 requires the preparation of a project-specific fire plan for the prevention, control, and extinguishment of fires. Additionally, APM FIRE-1 establishes performance standards to ensure that the risk of the spread of wildland fire would be adequately minimized. APM FIRE-1 would be necessary to further reduce potential impacts during construction and establish performance standards. With the implementation of APM FIRE-1, impacts would be less than significant and moderate.

Mitigation: None required.

Operation

The Project would involve the installation of approximately 104 miles of cable. Approximately 49 miles of the cable would be installed underground, while 0.8 mile of the cable would be located on new overhead lines and 28.6 miles of the cable would be placed on existing poles with previously installed lines. The remaining cable would be placed in existing conduit or in new conduit installed on the underside of bridges. During operation, the underground portions of the cable would not pose a wildfire risk. The new poles and cable installed as part of the Project would be minimal

and would be used to facilitate stream crossings. These poles would be located near water and would not be located near dense vegetation. Additionally, these new poles would be installed and maintained in accordance with CPUC GO 95 specifications for poles carrying communication cable, which would include clearance and inspection requirements to reduce the risk of ignition.

The remaining cable would be placed on existing poles with previously installed lines. Where the fiber optic cable is installed on existing power poles and lines, these power poles and lines would be constructed and maintained in accordance with CPUC GOs 95, 165, and 166, the utility-specific fire safety plans required under SB 901, and PRC Sections 4292 and 4293 as described below. In accordance with applicable firebreak clearance requirements (PRC Section 4292; 14 CCR Section 1254), vegetation would be managed around the PG&E power poles to reduce potential fire and other safety hazards. Also, in accordance with tree and power line clearance requirements (PRC Section 4293; 14 CCR Section 1256; CPUC GO 95), PG&E would regularly inspect and trim trees and vegetation to manage fire and safety hazards and ensure the electrical reliability of the PG&E power poles upon which the fiber optic cable would be located. The overall inspection, maintenance, risk management, emergency suppression, and response programs required by CPUC GOs 95, 195, 165, and 166, CPUC Decision 12-01-032, and California Public Utilities Code Section 702 would be incorporated into operation and maintenance protocols for the PG&E power poles and lines upon which the fiber optic cable would be located.

Fiber optic cables do not carry an electrical current; therefore, they are not likely to create a source of ignition. The fiber optic cable placed on joint-use poles would have the potential to ignite a fire should the wires supporting and securing the fiber optic cable come into contact with the jointly located electrical wires and create an arc, which could ignite nearby vegetation. Therefore, where the fiber optic cable would be co-located on existing PG&E power poles, the fiber optic cable could result in a minor increase in ignition risk. The fiber optic cable would be placed in accordance with CPUC GO 95, which includes wire-to-wire and wire-to-cable clearance requirements to reduce the likelihood of such an ignition. As a result, the fiber optic cable placed on joint-use power poles would not significantly increase fire risk.

The Project would involve placing fiber optic cable both underground and along existing power lines. Fiber optic cable buried underground would not increase wildfire risks, and cable placed on existing PG&E power poles would not substantially increase the risk of ignition. Furthermore, the PG&E poles on which the cable would be located would be maintained and operated in accordance with PG&E's Fire Prevention Plan and CPUC regulations. Therefore, once operational, the Project would not substantially increase exposure to wildfire risk for surrounding communities. Impacts would be less than significant and minor.

Mitigation: None required.

- c) Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment. *Less than Significant; Minor.***

As described in Chapter 2, vegetation removal would be limited to the amount necessary to install the fiber optic cable. This minor amount of vegetation clearance is considered part of the Project,

and the environmental impacts that may result are analyzed throughout this document on a resource-by-resource basis. In addition, construction and maintenance crews would have emergency water sources on-site to respond to fires. Therefore, the Project would not require the installation or maintenance of infrastructure that has not been considered in the analysis of the Project. As a result, impacts would be less than significant and minor.

Mitigation: None required.

d) Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes. *Less than Significant; Minor.*

The Project does not include any housing; therefore, it would not expose people to increased risk associated with flooding, landslides, or post-fire slope instability as a result of locating housing near such existing risks.

As discussed in response to question b), Project construction has the potential to increase wildfire risk as a result of increased sources of ignition. Implementing APM FIRE-1 would reduce potential sources of ignition and would require work crews to be prepared respond to incidents caused by construction equipment.

As identified in Section 4.9, response to question c.iii), implementing a storm water pollution prevention plan and best management practices for erosion control would reduce potential impacts related to drainage patterns during construction to a less-than-significant and minor level. Additionally, after construction, drainage patterns on-site would be relatively similar to existing conditions. Therefore, the Project would not result in changes to runoff or drainage patterns that could exacerbate downslope or downstream flooding, thereby exposing people or structures to associated risks.

Because the Project would have a low potential to exacerbate wildfire risk, it also would not pose a substantial risk of causing post-fire slope instability. Therefore, the potential for the Project to exacerbate the risk of flooding and mudslides as a result of post-fire slope instability would be less than significant and minor.

Mitigation: None required.

4.20.5 NEPA Alternatives

No-Project Alternative

Under the No-Project Alternative, the Project would not be constructed, operated and maintained, or decommissioned and internet services would generally continue as under existing conditions. Therefore, under the No-Project Alternative, no impact related to wildfire risk would occur. However, under a No-Project Alternative, there would be no potentially beneficial effect of increased communication and emergency response for the anchor institutions, as the Project's fiber optic system would not be implemented.

4.21 Mandatory Findings of Significance

<i>Issues (and Supporting Information Sources):</i>	<i>Potentially Significant Impact</i>	<i>Less Than Significant with Mitigation Incorporated</i>	<i>Less Than Significant Impact</i>	<i>No Impact</i>
21. MANDATORY FINDINGS OF SIGNIFICANCE — Would the project:				
a) Have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
b) Have impacts that are individually limited, but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
c) Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4.21.1 Mandatory Findings of Significance Discussion

- a) **Have the potential to substantially degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory. *Less than Significant with Mitigation; Moderate.***

As described in Section 4.4, *Biological Resources*, the Project has the potential for direct and indirect impacts on biological resources. These potential impacts include disturbance of special-status plant and wildlife species and their natural habitats during project construction and operation. As shown in Figure 4.4-1, the Project alignment would cross habitat that supports a variety of terrestrial and aquatic special-status species. To reduce potential impacts on these species, several Applicant proposed measures (APMs) would be implemented, including the use of construction techniques such as directional drilling to avoid impacts on wetlands and water bodies. Because the APMs would not fully reduce potential impacts on special-status species, Mitigation Measures BIO-1, BIO-2, BIO-3, and BIO-4 would be implemented. Implementing these mitigation measures would reduce impacts to less than significant and moderate.

The Project also has the potential to affect migration and other wildlife corridors and sensitive natural communities including old-growth redwood forest, riparian scrub, willow-cottonwood habitat, and wetlands. With the implementation of APMs, impacts on these habitats would be less than significant and minor.

As described in Section 4.5, *Cultural Resources*, the Project has the potential to adversely affect a number of known and unknown cultural resources, including non-architectural Native American resources and historic-era archaeological resources. Several APMs would be implemented as part of the Project to reduce impacts on these resources. However, Mitigation Measures CUL-1 through CUL- 16 would also be implemented to reduce impacts to a less than significant and moderate level.

**b) Have impacts that are individually limited, but cumulatively considerable.
*Less than Significant with Mitigation; Moderate.***

California Environmental Quality Act Guidelines (State CEQA Guidelines) Section 15130 requires a discussion of the cumulative impacts of a project when the project’s incremental contribution to a significant cumulative effect is “cumulatively considerable,” meaning that the project’s incremental effects are considerable when viewed in connection with the effects of past, current, and probable future projects. An incremental, project-specific contribution to a cumulative impact is less than cumulatively considerable, and thus is not significant, if, for example, the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact.

Consistent with State CEQA Guidelines Section 15130(b), the California Public Utilities Commission prepared a list of recent, present, and reasonably anticipated future projects that could produce related or cumulative impacts, including those projects outside the control of the lead agency. The commission also considered projections contained in planning documents designed to evaluate regional or areawide conditions. Existing conditions within the area of effect for cumulative impacts reflect a combination of the natural condition and the effects of past actions in the affected area. The following factors were also used to determine an appropriate list of projects to be considered in this cumulative analysis:

- **Similar Environmental Impacts**—A relevant project is a “reasonably foreseeable” project that would contribute to effects on resources also affected by the Project. For the purpose of this analysis, relevant projects with potential similar environmental impacts include, for example, other electric transmission or public utility–related projects.
- **Geographic Scope**—The appropriate geographic area of cumulative consideration is identified on a resource-by-resource basis, as dictated by relevant physical and/or environmental boundaries (such as the extent of the groundwater basin or the roadways traveled by Project vehicles).
- **Timing and Temporal Scope**—Incremental impacts of the Project could combine with the incremental impacts of other projects to cause or contribute to cumulative effects if the Project’s construction, operation, and maintenance periods would coincide in terms of timing with the effects of the other projects.

The projects considered part of the potential cumulative scenario are presented in **Table 4.21-1**, which also describes each project’s approximate location. These projects consist primarily of infrastructure, utility development, and capital improvement projects. The projects identified below are considered reasonably likely to be constructed and/or operated, and to contribute incremental impacts similar to and occurring during a similar time frame as the Project.

**TABLE 4.21-1
CUMULATIVE SCENARIO**

ID	Cumulative Project Name	Cumulative Project Location	Approximate Distance from the Klamath River Rural Broadband Initiative Project	Jurisdiction	Project Description	Construction Start Date	Construction End Date
	Redwoods Rising Harding Mill Planning Region, Greater Prairie Creek Ecosystem Restoration Project	Approximately 1 mile northeast of Orick; 0.5 mile east of U.S. 101/Bald Hills Road intersection	Adjacent to Segment 4	National Park Service	Forest and aquatic restoration and road removal within the approximately 10,300-acre project area. Forest restoration treatment within the Harding Mill Planning Region (approximately 300+ acres) would utilize the lop-and-scatter method, whereby felled trees would be cut (i.e., lopped) and broadcast (i.e., scattered) throughout the treatment area for natural decomposition. No felled trees would be removed.	Not specified	10–15 years
	Redwood National and State Parks Visitor Center and Restoration Project	Approximately 1 mile northeast of Orick; 0.25 mile east of U.S. 101/Bald Hills Road intersection	Adjacent to Segment 4	Humboldt County and National Park Service	Construction of a new visitor center for RNSP, the Yurok Demonstration Site, the Redwood Canopy Trail, local trails, a new segment of the California Coastal Trail, and a new trail connection to RNSP. The project also would include on-site stream and wetland restoration to enhance nearby Prairie, Skunk Cabbage, and Libby Creeks.	2020/2021	2024
	PG&E—underground conduit and vault installation	Last 6 miles of Segment 2	Adjacent to Segment 2	Yurok Reservation	Two substantial areas of underground installation in the last 6 miles of cable installation for Segment 2. Independent of the Project, PG&E recently completed installation of underground conduit and additional vault installation at each end of the conduit, which would be used to accommodate the Project cable.	Not specified	Completed 2020
	Yurok Connect Broadband Project	Wautec	Unknown	Yurok Reservation	Elevation of existing towers and installation of one new tower in the Wautec area.	Not specified	
	Energy Paths for the Yurok People	Wautec and Tulley Creek	Unknown	Yurok Reservation	Installation of on-grid solar systems at Tulley Creek fire station and Wautec fire station.	Not specified	
	Weitchpec Water Station	Approximately 0.15 mile north of SR 96 and Weitchpec School Road, in Weitchpec	0.15 mile from Segment 1 in Weitchpec	Humboldt County	Installation of well, water tank, and spigot for emergency access, flush hydrant, and direct line to community system to increase water supply reliability.	Summer 2017	Winter 2019 (estimated)
	Lower Mid-Klamath Habitat Protection—Road Decommissioning Implementation Project	30 miles of road within the Mid-Klamath watershed, near the town of Orleans and Red Cap and Peach Creeks	Approximately 1 mile east of Segment 1, In Orleans	Humboldt County	Implementation of proven decommissioning methods to remove and stabilize unstable fill at road/stream crossings, swales, and springs, and reestablish the natural hillslope drainage pattern along the entire road, using heavy equipment and hand labor.	Not specified	
	Camp Creek Habitat Protection—Road Decommissioning Implementation Project	16.02 miles of road within the Camp Creek watershed	3.2 miles north of SR 96	Humboldt County	Decommissioning of 16.02 miles of road within the ecologically sensitive 26,994-acre Camp Creek watershed.	Not specified	Not specified

NOTES: PG&E = Pacific Gas and Electric Company; Project = Klamath River Rural Broadband Initiative Project; RNSP = Redwood National and State Parks; SR = State Route; U.S. 101 = U.S. Highway 101

SOURCE: Data compiled by Environmental Science Associates in 2020

Aesthetic and Visual Resources

The Project would have no impact pertaining to scenic resources within a state scenic highway. Therefore, the Project would not cause or contribute to any cumulative impact related to such resources. *(No Impact; None)*

The geographic scope for an assessment of cumulative impacts on aesthetic and visual resources includes the viewsheds that could be affected by the Project as observed from public roadways, parks, open spaces, trails, or recreational areas. In this area, construction, operation, and maintenance of the Project would cause a less-than-significant and minor impact on scenic vistas, on the existing visual character or quality of public views of the site and its surroundings, and related to the creation of a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area. *(Less than Significant; Minor)*

Many aesthetics impacts would occur during construction, as the temporary presence of equipment, materials, and sanitation facilities would present short-term visual intrusions into an otherwise scenic area, affecting the quality of rural views for the duration of construction. At the conclusion of construction, vehicles and equipment would be removed from the site and roads would be returned to their preconstruction condition (per APM TRANS-3). Operation of the Project's subsurface fiber optic cable alignment would not result in any visual impacts after construction. The Project's proposed overhead cables would be placed on existing poles in a shared position with previously installed lines, and either would not be within the same viewshed as the cumulative projects listed in Table 4.21-1 or would not combine with these projects to create a cumulatively considerable aesthetic impact. Other proposed elements of the Project, such as the new Orick Tower and Antenna Ridge relay station, and modifications to other existing wireless towers (e.g., Wiregrass Tower), would similarly not be visible from cumulative project locations, given the distance between sites and/or topographical constraints. *(Less than Significant; Minor)*

Agriculture and Forestry Resources

The Project would have no impact with respect to converting Farmland to nonagricultural use, conflicting with agricultural zoning or a Williamson Act contract, conflicting with or causing rezoning of forest land or timberland, converting forest land to non-forest use, or causing other changes in the environment that could convert Farmland or forest land. Therefore, the Project could not cause or contribute to any potential cumulative impact related to these concerns. *(No Impact; None)*

Air Quality

The geographic scope considered for cumulative impacts on regional air quality is the North Coast Air Basin. In developing mass emissions thresholds for criteria air pollutant and ozone precursors for implementation of Best Available Control Technology requirements, the North Coast Unified Air Quality Management District considers the emission levels for which a project's individual emissions would be cumulatively considerable. Therefore, if a project would exceed the significance thresholds identified in Section 4.3.4, its emissions would be cumulatively considerable, and if a project would not exceed the significance thresholds, its emissions would not be cumulatively considerable. As described in Section 4.3, *Air Quality*

(see response to question b), Project-related construction emissions would be less than the respective significance thresholds, and therefore, would not be cumulatively considerable and would result in less than significant and minor cumulative impacts. (*Less than Significant; Minor*)

The geographic scope considered for cumulative impacts on local sensitive receptors is within 0.25 mile of the Project alignment and the location(s) of any sensitive receptors. Two ecosystem restoration projects adjacent to Segment 4 (the Redwoods Rising Project and Redwood National and State Parks Visitor Center and Restoration Project) could occur at the same time as the Project; however, the restoration projects' locations and the nearby portion of Segment 4 are not within 0.25 mile of a sensitive receptor. As identified in Table 4.21-1, *Cumulative Scenario*, and in the discussion above, no cumulative projects that would be constructed at the same time as the Project have been identified within 0.25 mile of any of the Project alignments or sites that are also within 0.25 mile of a sensitive receptor location. Therefore, the total emissions of criteria pollutants, ozone precursors, and diesel particulate matter from the Project's on-site construction equipment and operational standby generators would not combine with emissions from other cumulative projects to the extent that a significant cumulative impact would occur. The cumulative health risk impact associated with construction and operation of the Project would be less than significant and minor. (*Less than Significant; Minor*)

Odor impacts associated with the Project would be limited to construction-related combustion of diesel fuels. The impact would be less than significant and minor because construction activities would be intermittent and spatially dispersed, and associated odors would dissipate quickly. There is no existing adverse cumulative condition related to odors to which the Project could contribute. Given the distances of cumulative projects from the Project components and sensitive receptor locations, and the expected duration of sensitive receptors' exposure to Project-related diesel fumes, projects in the cumulative scenario are not expected to cause diesel-related odors that would intermingle with those of the Project, thereby causing a significant cumulative effect. As a result, the cumulative impact would be less than significant and minor. (*Less than Significant; Minor*)

Biological Resources

The geographic scope for cumulative effects on biological resources comprises the Project footprint and a 0.5-mile buffer. The Project would result in less than significant and moderate impacts on biological resources once APMs and mitigation measures are implemented. Impacts on biological resources would be localized and generally short term and direct, although the Project could result in indirect impacts such as erosion runoff, which could affect rare plants in the Project footprint or buffer area, or disturbance from construction noise and lighting, which could disturb nesting birds.

The potential for the Project's impacts to combine with those of other projects to result in cumulative impacts would be limited to those projects that would directly or indirectly affect the same resources within the Project footprint. None of the cumulative projects would directly affect the same biological resources that could be affected by the Project; all cumulative projects would be spatially distanced from the Project footprint and would not be constructed within the same location. There would be no potential for a cumulative direct impact associated with the Project. With respect to indirect impacts, cumulative projects would be expected to be constructed with the implementation of similar APMs and mitigation measures that would be applicable to the Project. With implementation of such measures, impacts from cumulative projects would be

expected to be less than significant and moderate. Therefore, with implementation of APMs and mitigation measures, it is considered unlikely that impacts of the Project would combine with those of cumulative projects to result in a cumulatively significant impact on biological resources. *(Less than Significant with Mitigation; Moderate)*

Cultural Resources

The geographic scope for cumulative effects on cultural and tribal cultural resources includes the immediate vicinity of locations where the Project could disturb known resources. The Project would have no impact related to an adverse change in the significance of a historical architectural resource, or on any known cultural or tribal cultural resources. Therefore, the Project would not cause or contribute to any cumulative impact related to such resources. *(No Impact; None)*

The Project area and vicinity contain a significant archaeological and historical record that, in many cases, has not been well documented or recorded. Thus, the potential exists for ongoing and future development projects in the vicinity to disturb landscapes that may contain known or unknown cultural resources. Environmental analysis is either underway or completed for many of these projects. Most potentially cumulative projects would result in ground disturbance and development within the geographic scope of this analysis. During ground-disturbing activities, cumulative projects in the vicinity could have a significant impact on previously undiscovered archaeological resources, including human remains interred outside of formal cemeteries, that could also be considered tribal cultural resources.

The Project could result in adverse effects on cultural resources. Such impacts would be limited to locations within the Study Area; however, when combined with the potential impacts of other projects proposed within the cumulative geographic scope, impacts on cultural resources could be cumulatively significant if multiple projects were to adversely affect the significance of similar types of resources (i.e., archaeological sites, human remains, or tribal cultural resources). However, implementing APMs CR-1 through CR-7 would ensure that cultural resources in the Area of Potential Effects would be avoided during construction through directional drilling or other methods, and that delineated locations for archaeological and Native American monitoring would be included in an established Archaeologically Sensitive Area through an archaeological monitoring plan. The cultural resources management plan would also include an outline for a worker cultural resources awareness training program and a comprehensive inadvertent-discovery plan. Cumulative projects undergoing CEQA review would have similar types of protective and inadvertent-discovery measures. Therefore, with implementation of APMs, the Project's contribution to cumulative impacts would not be considerable, and the impact would be less than significant with mitigation and moderate. *(Less than Significant; Moderate)*

Energy Conservation

The geographic context for potential cumulative impacts related to electricity use is Pacific Gas and Electric Company's service area for Humboldt County. For equipment and vehicle fuel use, the geographic context for potential cumulative impacts is within the Project's construction workers' commute radius (assumed to average 37 miles for the segments requiring the longest commute) and jurisdictions along the route from Eureka to Orick (assumed to be approximately 40 miles). These are the areas where materials required for major Project components would

likely be delivered and transported to the Project's construction sites, and the areas within which energy resources would be demanded and supplied for the Project. The Project would use energy resources during construction, operation, and maintenance; therefore, such activities could contribute to cumulative impacts during these phases.

Regarding electricity, there is no existing significant adverse condition that would be worsened or intensified by the Project or an alternative. The bulk of energy use would occur temporarily during construction; thus, no cumulative impact would occur.

Similarly, regarding the efficiency of fuel use, there is no existing significant adverse condition (such as a shortage) that would be worsened or intensified by the Project or an alternative. Past, present, and reasonably foreseeable future projects within approximately 40 miles of the Project alignment could require gasoline or diesel fuel, but would not combine with the Project's fuel demands to generate a significant adverse cumulative impact related to the wasteful, inefficient, or unnecessary consumption or use of fuel. Under these conditions, the Project's less than significant impacts related to wasteful, inefficient, or unnecessary consumption or use of fuel would not contribute to effects that would be cumulatively considerable. *(Less than Significant; Minor)*

Geology, Soils, and Paleontological Resources

The Project would have no impact related to soils incapable of supporting septic tanks or alternative wastewater disposal systems. Therefore, the Project would not cause or contribute to any cumulative impact related to this topic. *(No Impact; None)*

The geographic extent of cumulative geologic impacts includes areas in and immediately adjacent to the Project site because impacts relative to geologic hazards are generally site-specific. Unless the Project would alter the soils and rock underlying other adjacent projects or affect surrounding land as a result of landslides, impacts related to geologic, soils, and seismic hazards would be limited to the Project site. The Project could contribute to a cumulative impact if the effects of the Project were to overlap in time and space with those of other projects in the area, producing similar effects. In this area, construction, operation, and maintenance of the Project would cause an impact with respect to rupture of a known earthquake fault, strong seismic ground shaking, liquefaction, landslides, substantial soil erosion or loss of topsoil, or placement on unstable or expansive soils.

Seismically induced ground shaking, liquefaction and lateral spreading, and expansive or corrosive soils could cause structural damage during the Project's construction and operation phases. However, state and local building regulations and standards have been established to address and reduce the potential for such impacts. The Project and cumulative projects would be required to comply with the applicable provisions of these laws and regulations. Compliance with these requirements would reduce the potential for impacts. The purpose of the California Building Code (and local ordinances) is to regulate and control the design, construction, quality of materials, use/occupancy, location, and maintenance of all buildings and structures within its jurisdiction; by design, it is intended to reduce the cumulative risks from buildings and structures. Based on compliance with these requirements, the incremental impacts of the Project combined with impacts of other projects in the area would not combine to cause a significant cumulative impact related to seismically induced ground shaking, liquefaction and lateral spreading, or expansive or corrosive soils. *(Less than Significant; Minor)*

A National Pollutant Discharge Elimination System General Permit for Discharges of Storm Water Runoff Associated with Construction and Land Disturbance Activities (Construction General Permit) would be required for the Project and for any cumulative project that would result in more than 1 acre of disturbance. This permit dictates the preparation and implementation of a storm water pollution prevention plan (SWPPP), which would include best management practices to control runoff and prevent erosion. Through compliance with this requirement, the potential for erosion impacts would be controlled. The Construction General Permit been developed to address cumulative conditions arising from construction throughout the state, and is intended to maintain the cumulative effects of projects subject to this requirement below levels that would be considered significant. In this context, the Project's incremental less than significant, minor contribution would not cause or contribute to any significant cumulative effect related to soil erosion or the loss of topsoil. *(Less than Significant; Minor)*

With respect to paleontological resources, the potential for the Project's impacts to combine with those of other projects to result in cumulative impacts would be limited to those projects that would directly or indirectly affect the same resources within the Project footprint. None of the cumulative projects would directly affect the same paleontological resources that could be affected by the Project; all cumulative projects would be spatially distanced from the Project footprint and would not be constructed within the same location. There would be no potential for a cumulative impact on paleontological resources associated with the Project. *(No Impact; None)*

Greenhouse Gas Emissions

Greenhouse gas (GHG) emissions are inherently a cumulative concern, in that the significance of GHG emissions is determined based on whether such emissions would have a cumulatively considerable impact on global climate change (OPR, 2008). Although the geographic scope of cumulative impacts related to GHG emissions is global, this analysis focuses on impacts related to potential conflicts with California's reduction goals set forth in Executive Order S-3-05, Executive Order B-30-15, Assembly Bill 32, and the Project's direct and/or indirect generation of GHG emissions.

The Project would result in less than significant, minor emissions of GHGs and would not conflict with the state's GHG reduction goals (see responses to questions a) and b) in Section 4.8, *Greenhouse Gas Emissions*). Therefore, the Project-specific incremental impact associated with GHG emissions would not contribute to a significant cumulative impact, the incremental impact would not be cumulatively considerable, and the cumulative impact would be less than significant and minor. *(Less than Significant; Minor)*

Hazards and Hazardous Materials

Areas within the Project alignment are not on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5. The Project would not result in a safety hazard for people residing or working in the vicinity of an airport. Therefore, the Project would not cause or contribute to any cumulative impact related to these topics. *(No Impact; None)*

The geographic scope of the analysis for cumulative hazards and hazardous materials impacts is limited to the Project footprint including laydown and staging areas, as well as area roadways that

would be used by construction traffic and equipment. Hazards and hazardous materials impacts are generally site specific and depend on the nature and extent of the hazards and hazardous materials released, and existing and future soil and groundwater conditions. For example, hazardous materials incidents tend to be limited to small, localized areas surrounding the immediate spill location and extent of the release, and could only be cumulative if two or more hazardous materials releases were to overlap spatially and temporally.

Compliance with applicable regulatory requirements along with implementation of APM HAZ-1, construction, operation, and maintenance of the Project would cause a less than significant and moderate impact related to the transport, use, disposal of hazardous materials; upset and accident conditions involving the release of hazardous materials; or hazardous emissions, wastes, or materials within one-quarter mile of an existing or proposed school.

The cumulative projects listed in Table 4.21-1 would be subject to the same regulatory requirements, including the implementation of hazardous materials plans as needed. Cumulative projects involving releases of or encountering hazardous materials would be required to remediate their respective sites to the same established regulatory standards. This would be the case regardless of the number, frequency, or size of the release(s), or the residual amount of chemicals present in the soil from previous spills. It is possible that the Project and some of the cumulative projects could release hazardous materials at the same location and time; however, the responsible party associated with each spill would be required to remediate site conditions to the same established regulatory standards. The Project's potential residual effects after compliance with these regulatory requirements would not combine with the potential residual effects of cumulative projects to cause a significant cumulative impact, because residual impacts would be highly site specific and would have been cleaned up to the same regulatory standard. Accordingly, no substantial cumulative impact with respect to the use of hazardous materials would result. (*Less than Significant; Minor*)

Potential cumulative impacts with respect to wildfires are discussed in response to question c) at the end of this section.

Hydrology and Water Quality

The Project would have no impact regarding the release of pollutants due to project inundation in a flood hazard, tsunami, or seiche zone. Therefore, the Project would not cause or contribute to any cumulative impact related to this topic. (*No Impact; None*)

The geographic scope of cumulative impacts related to hydrology and water quality encompasses the watersheds, flood hazard areas, and groundwater basins affected by the Project. The Project and cumulative projects are and would be located in the Lower Klamath River, Redwood Creek, Trinidad, and Mad River watersheds and the Mad-Redwood Groundwater Basin.

The Project could cause impacts related to the following:

- Substantial degradation of surface water or groundwater quality.
- Substantial depletion of groundwater supplies or substantial interference with groundwater recharge.

- Substantial alteration of existing drainage patterns in a manner which would result in substantial erosion or siltation, increase surface runoff resulting in on- or off-site flooding, create runoff that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff, or impede or redirect flood flows
- A conflict with or obstruction of implementation of a water quality control plan or sustainable groundwater management plan.

Construction-related impacts on water quality associated with the Project and the projects identified in Table 4.21-1 could result from several different sources. Among these sources are contamination from fuels or other hazardous materials and an increase in erosion caused by grading or vegetation clearing that leads to increased sedimentation. In some instances, minor grading may also be needed to improve work areas or existing access roads. The Project, along with projects identified in Table 4.21-1, have the potential to adversely affect water quality temporarily because of erosion and subsequent sedimentation that can occur when off-road vehicle uses or earth-disturbing activities increase. However, with the implementation of APMs and compliance with a Construction General Permit, which would require preparing and implementing a SWPPP, and with implementation of Mitigation Measure HAZ-1, the Project's impacts on water quality would be less than significant.

Similar to the Project, cumulative projects would be required to comply with federal, state, and local regulations and other measures to protect water quality, including SWPPPs where applicable. With implementation of similar protective measures as part of the development of the projects identified in Table 4.21-1, there would not likely be a significant adverse cumulative condition with water quality to which the Project would contribute. Therefore, the incremental contributions of Project-related impacts would not be cumulatively considerable. *(Less than Significant with Mitigation; Moderate)*

Land Use and Planning

The Project would result in no impact related to the physical division of an established community, nor would it conflict with any applicable habitat conservation plan or natural community conservation plan. Also, as discussed in Section 4.11.4, the Project would not conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project. Because the Project would have no impact pertaining to land use and planning considerations, the Project could not cause or contribute to a cumulative land use and planning-related impact. *(No Impact; None)*

Mineral Resources

The Project is not located in a mineral resource area or a locally important mineral resource recovery site delineated on any local land use plans. Therefore, the Project would not cause or contribute to any cumulative impact related to mineral resources. *(No Impact; None)*

Noise and Vibration

The geographic context for the evaluation of cumulative impacts associated with noise and vibration includes residential and commercial areas of unincorporated Humboldt County. To

contribute to a cumulative noise impact, Project construction activities would have to occur near (within 1,000 feet of) and at the same time as noise and vibration–generating activities of cumulative projects listed in Table 4.21-1, and near (within 1,000 feet of) a sensitive receptor.

As discussed in Section 4.13.4, construction activities would expose nearby sensitive receptors to noise levels that would not exceed local noise standards found in the Humboldt County General Plan and would not result in a substantial temporary noise increase. If Project construction were to coincide with construction of another cumulative project, the combined effect could expose affected sensitive receptors to even greater noise levels and/or expose additional (new) sensitive receptors to noise impacts. There are two ecosystem restoration projects adjacent to Segment 4 (the Redwoods Rising Project and Redwood National and State Parks Visitor Center and Restoration Project) that could occur at the same time as the Project; however, the locations of these restoration projects and the nearby portion of Segment 4 are not within 1,000 feet of a sensitive receptor. Because the cumulative projects would occur more than 1,000 feet from the locations of sensitive receptors, noise resulting from simultaneous construction of these projects would result in a less than significant and minor cumulative impact on sensitive receptors in the vicinity of the Project area. (*Less than Significant; Minor*)

For a cumulative vibration impact to occur, equipment used to construct the Project would have to operate within at least 100 feet of a neighboring cumulative project’s construction equipment and sensitive structures, at the same time. As discussed in Section 4.13.4, construction activities to install fiber optic cable and construct the new towers would not expose nearby residences or structures to vibration levels that would result in human annoyance or building damage. Because there are no cumulative projects within 100 feet of any of the Project construction areas and sensitive structures susceptible to vibration damage, vibration resulting from simultaneous construction of these projects would result in a less than significant and minor cumulative impact on sensitive receptors in the vicinity of the Project area. (*Less than Significant; Minor*)

As discussed in Section 4.13.4, Project operations would not expose nearby sensitive receptors in the vicinity of the Project area to noise levels that could exceed local standards and would not result in a substantial permanent increase in ambient noise levels without the Project. Therefore, a cumulatively significant operational noise impact would not occur, and the Project’s contribution to cumulative operational noise impacts would be less than significant and minor. (*Less than Significant; Minor*)

Population and Housing

The Project would have no impact related to the displacement of substantial numbers of existing housing units or substantial numbers of people, necessitating the construction of replacement housing elsewhere. The Project also would result in no impact related to the direct inducement of substantial population growth in the affected area. Therefore, the Project would not cause or contribute to cumulative impacts related to these considerations. (*No Impact; None*)

The geographic context for the consideration of potential cumulative impacts associated with the indirect inducement of substantial population growth is Humboldt County, primarily the towns and villages that would be directly served by the project: Orick, Orleans, Wautec, and Weitchpec.

The Project would result in a less than significant and minor impact related to the indirect inducement of substantial population growth. Operation of the Project would provide and expand the availability of high-speed internet access to existing rural residents, businesses, and schools in the Study Area. Implementation of the Project would be expected to contribute to the retention of existing residents and businesses, which could indirectly contribute to a limited amount of future growth. Some of the cumulative projects would similarly serve existing residents in this remote area of Humboldt County (e.g., Yurok Connect Broadband Project) and would not induce substantial population growth. Other projects are intended to protect or restore natural resources or provide expanded visitor services (e.g., Redwood National and State Parks Visitor Center and Restoration Project), and would not induce population growth. Therefore, the Project's contribution to cumulative indirect inducement of substantial population growth would not be considerable. *(Less than Significant; Minor)*

Public Services

The Project would have no impact associated with the provision of or need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for police or fire protection, schools, parks, or other public facilities. Therefore, the Project would not cause or contribute to any cumulative impact related to these considerations. *(No Impact; None)*

Recreation

The Project would not increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated. The Project would have no impact pertaining to the proposed construction or expansion of recreational facilities because the Project does not include recreational components, the construction of which might have an adverse physical effect on the environment. Therefore, the Project would not cause or contribute to any cumulative impact related to recreation. *(No Impact; None)*

Socioeconomics and Environmental Justice

The Project would have either no impact or beneficial effects regarding significant changes to population, housing, employment, or other socioeconomic factors. The Project would not result in disproportionately high or adverse impacts on minority or low-income communities. Therefore, the Project would not cause or contribute to any cumulative impact. *(No Impact; Beneficial)*

Transportation and Traffic

The geographic context for considering potential cumulative impacts associated with transportation and traffic issues includes the roadways used by Project-generated worker and truck trips, and for access by emergency service vehicles, as well as bicycle and pedestrian facilities.

The Project would result in a less than significant and minor impact related to conflicts with programs, plans, ordinances, or policies addressing the circulation system; design feature hazards; or emergency access. The temporal context for the analysis of cumulative transportation and traffic impacts is limited to the Project's construction phase, as operation and maintenance activities that

could affect transportation would be negligible. The potential for the effects of any of the cumulative projects to combine with those of the Project would be limited to times when such a project would be under construction at the same time as a component of the Project. The Project would generate low levels of construction traffic, with a maximum of only 42 one-way construction trips at the peak of construction. Even if any of the cumulative projects were constructed at the same time as the Project, the low quantities of Project-generated traffic mean that a cumulative traffic impact would be unlikely. The projects listed in Table 4.21-1 are all small-scale developments that would not generate high levels of construction traffic. In addition, cumulative projects would likely be required to implement traffic control and emergency access measures similar to those that would be implemented for the Project. Therefore, a cumulative impact associated with traffic and transportation would not be likely to occur. (*Less than Significant; Minor*)

Utilities and Service Systems

The Project would have no impact related to the relocation or construction of new or expanded water, wastewater treatment, stormwater drainage, or electric power facilities, the construction of which could cause significant environmental effects. The Project itself consists of the proposed construction of telecommunications facilities, the effects of which are the subject of this initial study. The Project would have no impact related to the sufficiency of water supplies available to serve the Project; the adequacy of wastewater treatment capacity to serve the Project's projected demand in addition to the provider's existing commitments; or the generation of solid waste in excess of state or local standards, or the capacity of local infrastructure. Therefore, the Project would not cause or contribute to any cumulative impact related to these considerations. (*No Impact; None*)

c) Have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly. *Less than Significant; Moderate.*

As described in Section 4.9, *Hazards and Hazardous Materials*, the Project would not be anticipated to cause any substantial adverse effects on human beings. During construction, some potential could exist for accidental spills of hazardous materials, such as fuels, lubricating fluids, and solvents, but APM HAZ-1 would require that hazardous materials and wastes be handled, stored, and transported safely and in accordance with applicable requirements.

There are several schools and numerous residences within 0.25 mile of the Project alignment; however, the hazards and hazardous materials analysis concluded that the Project's potential to expose these sensitive receptors to hazardous materials would be less than significant with mitigation and moderate. Additionally, with any project involving excavation, the potential exists to strike existing utility lines, including natural gas lines, which could potentially cause a fire or explosion. The construction contractor would be responsible for identifying underground utility lines before construction, and a significant hazard to human beings from accidental striking of an underground natural gas line is considered extremely unlikely.

The Project would have the potential to be a source of wildfire. However, as part of APM FIRE-1, the construction contractor would provide and implement a construction fire prevention plan, which would reduce this risk. This impact would be less than significant and moderate.

CHAPTER 5

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CHAPTER 6

Mitigation Monitoring, Compliance, and Reporting Program

Mitigation Monitoring, Compliance, and Reporting Program Klamath River Rural Broadband Initiative (CPUC Resolution T-17690)

6.1 Introduction

This document describes the mitigation monitoring, compliance, and reporting program (MMCRP) to ensure effective implementation of the mitigation measures required for approval by the California Public Utilities Commission (CPUC, or Commission) of the Resolution (T-17690) by the Karuk Tribe (or Applicant) for California Advanced Services Fund (CASF) funding to construct, operate, and maintain the Klamath River Rural Broadband Initiative (Project). The MMCRP includes all applicable measures proposed by the Applicant [Applicant Proposed Measures (APMs) not superseded by mitigation measures] and all mitigation measures identified by the CPUC to reduce potentially significant impacts to less-than-significant levels.

Following CPUC granted Project approval, this MMCRP serves as a self-contained general reference for the Project adopted by the Commission, to ensure that all measures are included and implemented as adopted.

6.1.1 California Public Utilities Commission – MMCRP Authority

The California Public Utilities Code confers authority upon the CPUC to regulate the terms of service and the safety, practices, and equipment of utilities subject to its jurisdiction. It is the standard practice of the CPUC, pursuant to its statutory responsibility to protect the environment, to require that mitigation measures stipulated as conditions of approval be implemented properly, monitored, and reported on. In 1989, this requirement was codified statewide as Section 21081.6 of the Public Resources Code. Section 21081.6 requires a public agency to adopt a mitigation monitoring or reporting program when it approves a project and adopts a mitigated negative declaration for a project that could have potentially significant environmental effects. California Environmental Quality Act (CEQA) Guidelines Section 15097 was added in 1999 to further clarify agency requirements for mitigation monitoring and reporting.

Pursuant to NEPA, as specified by 40 CFR 1505.2(c) and in accordance with CEQ guidance, federal agencies also have responsibility to monitor mitigation (DOI, 2012). Mitigation monitoring has two basic goals to ensure implementation and effectiveness:

1. Implementation monitoring should be undertaken to ensure that actions comply with the terms, conditions, and mitigation measures.
2. Effectiveness monitoring should measure and evaluate the effects of the mitigation efforts. If the mitigation measures are not achieving their designed goals, then monitoring should provide a mechanism to adjust the mitigation measures.

The purpose of a MMCRP is to ensure that measures adopted to mitigate or avoid significant impacts of a project are implemented. The CPUC views the MMCRP as a working guide to facilitate not only the implementation of mitigation measures by the Project proponent, but also the monitoring and reporting activities of the CPUC and any monitors it may designate.

This MMCRP consolidates mitigation monitoring and reporting requirements prescribed by the CPUC as part of the CEQA record along with NEPA provisions, for the federal lead, responsible, and cooperating agencies into one document; and outlines key actions and strategies the Applicant proposes to undertake to achieve its obligations relating to monitoring and reporting compliance with the final environmental commitments (mitigation measures and applicant proposed measures) for the Project, as identified in Table 6-1 of the Draft ISMND/EA.

6.1.2 Overview of Mitigation Requirements

The ISMND/EA presents and analyzes potential environmental impacts that would result from construction, operation, and maintenance of the approved Project, and proposes mitigation measures as appropriate. Based on the ISMND/EA, approval of the application would have no impacts or less than significant impacts in the following resource areas, assuming the implementation of Applicant Proposed Measures as detailed in Table 6-1:

- Aesthetics
- Air Quality
- Agriculture and Forestry Resources
- Energy Conservation
- Geology, Soils and Paleontological Resources
- Greenhouse Gas Emissions
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use and Planning
- Mineral Resources
- Population and Housing
- Public Services
- Recreation
- Socioeconomics and Environmental Justice
- Transportation and Traffic
- Utilities and Service Systems
- Wildfire

The ISMND/EA indicates that approval of the application would result in potentially significant impacts in the resource areas indicated below, and so identifies APMs and mitigation measures that have been accepted by the Applicant which, when implemented, would reduce impacts to levels below established thresholds of significance.

- Biological Resources
- Cultural Resources
- Noise and Vibration

6.1.3 Roles and Responsibilities

The CPUC will be responsible for ensuring full compliance with the provisions of this MMCRP and has primary responsibility for implementation of the monitoring program, as the CEQA lead agency. The purpose of the monitoring program is to document that the mitigation measures required by the CPUC are implemented and that mitigated environmental impacts are reduced to less than significant levels. The CPUC has the authority to halt any activity associated with the approved project if the activity is determined to be a deviation from the approved project or the adopted APM and mitigation measures.

The Commission addresses its responsibility under Public Resources Code Section 21081.6 through a decision action regarding the Karuk Tribe's application. Commission approval of the application includes adoption of this MMCRP that includes the mitigation measures as well as the APMs, implementation of which are made a condition of approval by the Commission.

Although the CPUC considers approval of the application for authority to construct and operate the proposed Project, the Applicant remains responsible for implementation of any mitigation measures governing both construction and future operation of the approved Project. Though other state and local agencies have permit and approval authority over some aspects of the Project, the CPUC acts as the state lead agency for monitoring compliance with all mitigation measures required by the ISMND/EA. As federal Lead Agency, the BIA is also responsible for monitoring implementation and effectiveness of the mitigation measures and APMs (presented in Table 6-1). All approvals and permits obtained by the Karuk Tribe would be submitted to the CPUC and BIA for mitigation compliance prior to commencing the activity for which the permits and approvals were obtained.

6.1.4 Enforcement and Responsibility

The CPUC may delegate duties and responsibilities for monitoring to other mitigation monitors or consultants as deemed necessary. The CPUC will ensure that the person(s) delegated any duties or responsibilities are qualified to monitor compliance.

The CPUC in collaboration with the BIA is responsible for enforcing the procedures for monitoring through its mitigation monitor. The mitigation monitor shall note problems with monitoring, notify appropriate agencies or individuals about any problems, and report the problems to the CPUC. The CPUC has the authority to halt construction, operation, or maintenance activity associated with the Project if the activity is determined to be a deviation from the approved Project or adopted APMs or mitigation measures.

6.1.5 Mitigation Compliance Responsibility

The Applicant is responsible for successfully implementing all of the adopted APMs and mitigation measures in this MMCRP. The MMCRP contains criteria that define whether mitigation is

successful. Standards for successful mitigation also are implicit in many mitigation measures that include such requirements as obtaining permits or avoiding a specific impact entirely. Additional mitigation success thresholds will be established by applicable agencies with jurisdiction through the permit process and through the review and approval of specific plans for the implementation of mitigation measures.

The Applicant shall inform the CPUC and its mitigation monitor in writing of any APMs or mitigation measures that are not or cannot be successfully implemented. The CPUC in coordination with its mitigation monitor will assess whether alternative mitigation is appropriate and specify to the Applicant the subsequent actions required.

Minor Project Refinements

The CPUC, along with its mitigation monitor, will ensure that any minor project refinement process, which will be designed specifically for the approved Project, or deviation from the procedures identified under the monitoring program would be consistent with CEQA requirements; no Project deviation will be approved by the CPUC if it creates new significant environmental impacts. As defined in this MMCRP, any deviation should be strictly limited to minor project refinements that will not trigger other permit requirements, that does not increase the severity of an impact or create a new impact, and that clearly and strictly complies with the intent of the mitigation measure. A refinement to the approved project that has the potential for creating significant environmental effects will be evaluated to determine whether supplemental CEQA review is required. Any proposed deviation from the approved Project APMs and adopted mitigation measures, including correction of such deviation, shall be reported immediately to the CPUC and the mitigation monitor assigned to the construction for their review and CPUC approval. In some cases, a deviation may also require approval by a responsible agency.

Minor project refinements are limited to changes that do not trigger additional permit requirements (other than local government ministerial permits), do not increase the severity of an impact or create a new significant impact, and are within the geographic scope of the ISMND/EA. The CPUC, along with the CPUC CM, would evaluate any proposed changes from the approved project to determine whether they are consistent with approved CEQA requirements. If the CPUC determined the changes to be consistent with approved CEQA requirements, a requested change would be processed as a minor project refinement using a Minor Project Refinement Form provided by the CPUC. Requests for Minor Project Refinements must be made in writing. The CPUC PM or CM may request additional information, agency consultations, or a site visit in order to process the request.

Dispute Resolution

The MMCRP is expected to reduce or eliminate potential disputes between CPUC staff and the applicant concerning implementation of the adopted mitigation measures. Issues should first be addressed informally at the field level between the CPUC Environmental Monitoring Team and the Applicant's Environmental Compliance Team with questions that may be raised to the Applicant, EPM, PM, or Construction Manager, as necessary. Should the issue not be resolved at the field

level, the following procedure will be observed for dispute resolution between CPUC staff and the Applicant:

- Disputes and complaints should be directed first to the CPUC’s designated Project Manager for resolution. The Project Manager will attempt to resolve the dispute.
- Should this informal process fail, the CPUC Project Manager may initiate enforcement or compliance action to address deviations from the approved Project or MMCRP.

6.1.6 Construction Schedule and General Monitoring Procedures

Construction Schedule

In the event that situations requiring major changes pertaining to the construction schedule should occur, the Applicant will be expected to keep the CPUC environmental compliance team informed. The anticipated schedule for construction of the Project is presented in Chapter 2.

6.1.7 General Monitoring Procedures

Mitigation Monitor

Many of the monitoring procedures will be conducted during the construction phase of the Project. The CPUC and the mitigation monitor are responsible for integrating the mitigation monitoring procedures into the construction process in coordination with the Applicant. To oversee the monitoring procedures and to ensure success, the mitigation monitor assigned to the construction must be on site during that portion of construction that has the potential to create a significant environmental impact or other impact for which mitigation is required. The mitigation monitor is responsible for ensuring that all procedures specified in this MMCRP are followed.

Construction Personnel

A key feature contributing to the success of mitigation monitoring will be obtaining the full cooperation of construction personnel and supervisors. Many of the mitigation measures and APMs require action on the part of the construction supervisors or crews for successful implementation. To ensure success, the following actions, detailed in specific mitigation measures included in this MMCRP, will be taken:

- The Applicant shall require all contractors to comply with the conditions of Project approval, including all applicable APMs and mitigation measures.
- One or more pre-construction meetings will be held to inform all and train construction personnel about the requirements of the MMCRP.
- A written summary of mitigation monitoring procedures will be provided to construction supervisors for all APMs and mitigation measures requiring their attention.

General Reporting Procedures

Site visits and specified monitoring procedures performed by other individuals will be reported to the mitigation monitor assigned to the construction. A monitoring record form will be submitted to the mitigation monitor by the individual conducting the visit or procedure so that details of the visit can be recorded, and progress tracked by the mitigation monitor. A checklist will be developed and maintained by the mitigation monitor to track all procedures required for each mitigation measure and to ensure that the timing specified for the procedures is adhered to. The mitigation monitor will note any problems that may occur and take appropriate action to rectify the problems. The Applicant shall provide the CPUC with written bi-annual reports of the Project, which shall include progress of construction, resulting impacts, mitigation implemented, and all other noteworthy elements of the Project. Reporting shall be required as long as mitigation measures are applicable.

Public Access to Records

The public is allowed access to (non-confidential) records and reports used to track the monitoring program. Monitoring records and reports will be made available for public inspection by the CPUC on request. The CPUC and the Applicant will develop a filing and tracking system.

Condition Effectiveness Review

In order to fulfill its statutory mandates to mitigate or avoid significant effects on the environment and to design a MMCRP to ensure compliance during project implementation (Pub. Res. Code §21081.6):

- The CPUC may conduct a comprehensive review of conditions which are not effectively mitigating impacts at any time it deems appropriate, including as a result of the Dispute Resolution procedure outlined above; and
- If in either review, the CPUC determines that any conditions are not adequately mitigating significant environmental impacts caused by the project, or that recent proven technological advances could provide more effective mitigation, then the CPUC may impose additional reasonable conditions to effectively mitigate these impacts.

These reviews will be conducted in a manner consistent with the CPUC's rules and practices.

6.2 Mitigation Monitoring, Reporting and Compliance Program

Table 6-1 presents a compilation of the APMs and mitigation measures in this ISMND/EA. The purpose of the table is to provide a single comprehensive list of impacts, mitigation measures, APMs, monitoring and reporting requirements, and timing to minimize impacts on the environment that may result from implementation of the Project. The impact analysis in this ISMND/EA assumes that the APMs listed below would be implemented as part of the Project.

**TABLE 6-1
MITIGATION MONITORING, REPORTING, AND COMPLIANCE PROGRAM FOR THE KLAMATH RIVER RURAL BROADBAND INITIATIVE**

Environmental Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs) Identified in the ISMND/EA	Implementing Actions	Monitoring/Reporting Requirements and Timing
Aesthetics			
	APM VIS-1: In areas with high scenic sensitivity, such as RNP, markers indicating underground fiber optic cable will be 2 feet tall 4 x 4 inches treated wooden posts with attached dulled metal signs that are legible but not visually intrusive, or as specified by the land managing agency. In part of the RNP aboveground markers will not be used; instead, a specialized detection system will be installed in new underground splice vaults to avoid visual impacts.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. CPUC mitigation monitor to verify compliance.
	APM VIS-2: Where required by the land managing agency or landowner, safety markers indicating the presence of underground utilities can be omitted. Additional detection systems will be installed in the vaults and along the fiber optic cable lines.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. CPUC mitigation monitor to verify compliance.
	APM TRANS-3: Roads negatively affected by construction and as identified by the agencies will be returned to preconstruction condition.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction and immediately prior to operation. CPUC mitigation monitor to verify compliance.
Agriculture and Forestry Resources			
	No mitigation required.		
Air Quality			
	APM AIR-1: Fugitive dust produced during construction will be controlled with watering as needed. Watering will only settle the dust and will not create runoff	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure prior to and during construction. CPUC mitigation monitor to verify compliance.
	APM AIR-2: Trucks and heavy equipment used during construction of this Project will meet California Air Resources Board standards for air pollution control for their model year.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure prior to and during construction. CPUC mitigation monitor to verify compliance.
Biological Resources			
	APM GEN-5: Directional drilling will be used where needed and approved to avoid impacts to water, biological and cultural resources.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction activities involving directional drilling. CPUC mitigation monitor to verify compliance.
	APM GEN-9: The Construction Contractor will be required to develop and implement a Worker Environmental Awareness Program (WEAP).	The Karuk Tribe and/or its designated contractor to provide training materials to CPUC and implement measure as defined.	Training shall be provided prior to and during construction and repeated for all new construction personnel and evidence of such provided to CPUC. CPUC mitigation monitor to review training materials and verify compliance.
	APM WET-1: Wetland delineations will be performed/updated prior to construction to support CWA Section 404 permitting and to minimize Project impacts. The delineation will identify both wetland and non-wetland waters of the United States that would be affected by the project.	The Karuk Tribe and/or its designated qualified contractor to implement measure as defined. The wetland delineation shall be provided to CPUC.	Wetland delineation to occur prior to any construction activities that could impact wetlands. CPUC mitigation monitor to review wetland delineation prior to construction.

TABLE 6-1 (CONTINUED)
MITIGATION MONITORING, REPORTING, AND COMPLIANCE PROGRAM FOR THE KLAMATH RIVER RURAL BROADBAND INITIATIVE

Environmental Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs) Identified in the ISMND/EA	Implementing Actions	Monitoring/Reporting Requirements and Timing
Biological Resources (cont.)			
	APM WET-2: Where impacts on wetlands are not avoidable, site specific crossing plans and measures to mitigate impacts will be submitted to the appropriate regulatory agency as well as the land managing agency. The Karuk Tribe will obtain all necessary permits prior to discharging dredged or fill material to the waters of the U.S. or state.	The Karuk Tribe and/or its designated contractor to implement measure as defined. Verification of permits shall be provided to CPUC.	Implement measure prior to and during any construction activities that could impact wetlands. CPUC mitigation monitor to review permits for compliance.
	APM WET-3: If trench dewatering is needed, it will be completed per the Caltrans BMP NS-2 specifications and Field Guide to Construction Site Dewatering.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. CPUC mitigation monitor to verify compliance.
	APM SOIL-1: Disturbance of soils and rocks and vegetation removal will be limited to the minimum area necessary for access and construction.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. CPUC mitigation monitor to verify compliance.
	APM WEED-1: Project personnel and their contractors will be trained on noxious and invasive weed identification to facilitate avoidance of infestations where possible or identification of new infestations.	The Karuk Tribe and/or its designated contractor to implement measure as defined. Training materials shall be provided to CPUC for review.	Implement measure prior to construction. CPUC mitigation monitor to review training materials for compliance.
	APM WEED-2: Gravel and other materials used during fiber optic cable installation on federally managed lands will come from certified weed-free sources.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. CPUC mitigation monitor to verify compliance.
	APM WEED-3: Project vehicles will arrive at the job site clean of all soil and herbaceous material. The Construction Contractor will ensure vehicles and equipment are free of soil and debris capable of transporting noxious weed seeds, roots, or rhizomes before the vehicles and equipment access the Project.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. CPUC mitigation monitor to verify compliance.
	APM BIO-1: If construction will occur during nesting season for migratory birds (16 U.S.C sec.703-712, typically March – July) a qualified biologist will conduct a preconstruction survey for nesting birds where vegetation removal is planned (e.g. plowing, trenching, establishment of directional drilling entry and exit pits, and new pole installation). If no nests are encountered, vegetation removal may proceed. If a nest is found, that vegetation may not be removed until a biologist has determined that the nest is unoccupied, has failed, or the young have fledged.	The Karuk Tribe and/or its designated qualified contractor to implement measure as defined. Preconstruction surveys shall be provided to CPUC	Implement measure prior to and during construction, as applicable during nesting season. CPUC qualified monitor to verify compliance.
	APM BIO-2: Seasonal restrictions for construction in old-growth forests in RNP, as specified by NPS regulations and policy, will be followed. Seasonal restrictions for construction in GDR lands will follow GDR policies and agreements.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. CPUC mitigation monitor to verify compliance.
	APM BIO-3: CNDDDB data from 2021 show that there are no mapped NSO nests within 0.25-mile of the Project centerline. Available CNDDDB data from the breeding season prior to construction would be reviewed to assure that there are no new NSO nests within 0.25-mile of the Project centerline. If a new NSO nest is recorded within 0.25-mile of the Project centerline, no construction would be allowed within 0.25-mile of the nest between February 1 and August 1, or until a qualified biologist has determined that the young are fledged, the nest abandoned, or the nest failed.	The Karuk Tribe and/or its designated qualified contractor to implement measure as defined	Implement measure up to 30 days prior to and during construction within the nesting season. CPUC mitigation monitor to verify compliance.

TABLE 6-1 (CONTINUED)
MITIGATION MONITORING, REPORTING, AND COMPLIANCE PROGRAM FOR THE KLAMATH RIVER RURAL BROADBAND INITIATIVE

Environmental Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs) Identified in the ISMND/EA	Implementing Actions	Monitoring/Reporting Requirements and Timing
Biological Resources (cont.)			
	<p>APM BIO-4: Directional drilling will be used in areas of old-growth redwood roots (Segment 4, Bald Hills Road) to avoid impacts to the trees. The Applicant will consult with NPS to determine the need for hand excavation to prevent damage to tree root systems.</p>	<p>The Karuk Tribe and/or its designated contractor to implement measure as defined.</p>	<p>Implement measure during construction. CPUC mitigation monitor to verify compliance.</p>
	<p>APM BIO-5: Where bridge hangs are planned, a preconstruction survey for listed species of bats will occur. If a maternal colony of a listed bat is found, construction will be deferred until the young have been weaned.</p>	<p>The Karuk Tribe and/or its designated qualified contractor to implement measure as defined. [see also MM BIO-3]</p>	<p>Implement measure prior to construction, as applicable, where bridge hang installation methods are planned. CPUC mitigation monitor to verify compliance</p>
<p>Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special-status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS (including Rank 1A, 1B, and 2 plant species of the CNPS Inventory).</p>	<p>MM BIO-1: Avoid Impacts to Rare Plants.</p> <p>A qualified biologist shall conduct a preconstruction survey of each Project site for special-status plant species with the potential to occur within the area of disturbance. The survey shall be floristic in nature and shall follow the procedures outlined in the CDFW publication <i>Protocols for Surveying and Evaluating Impacts to Special-status Native Plant Populations and Natural Communities</i> (CDFW, 2018). The survey shall be conducted between April and July in conjunction with the blooming seasons of those rare plants with moderate potential to occur in the Project area.</p> <p>If no special-status plants are observed during appropriately timed surveys by a qualified botanist, it shall be assumed that the construction activity will have no impact on special-status plants and no further action is required.</p> <p>If special-status plants are identified within the Project area, the individuals or populations shall be mapped and quantified and reported to the CNDDDB, and the project manager shall be notified so that potential impacts on these known occurrences shall be avoided, when feasible. Coordination with CDFW and/or USFWS staff shall be conducted to establish appropriate avoidance and minimization measures if the species is federally or state listed. Avoidance and minimization measures may include:</p> <ol style="list-style-type: none"> 1. No-disturbance buffers. 2. Work windows for low impact activities that are compatible with the dormant phase of a special-status plant life cycle but that may kill living plants or severely alter their ability to reproduce. 3. Silt fencing or construction fencing to prevent vehicles, equipment, and personnel from accessing the occupied habitat. 4. Erosion control BMPs such as straw wattles made of rice straw, erosion control blankets, or hydroseeding with a native plant seed mix to prevent sedimentation from upslope construction activities. 5. In consultation with, and as authorized by, CDFW or USFWS, a qualified botanist may collect and spread seeds or relocate plants to appropriate locations. 	<p>The Karuk Tribe and its designated qualified contractor to implement measure as defined.</p>	<p>Pre-construction survey to be conducted up to 30 days prior to construction of the project (in the blooming season). CPUC mitigation monitor to verify compliance.</p>

TABLE 6-1 (CONTINUED)
MITIGATION MONITORING, REPORTING, AND COMPLIANCE PROGRAM FOR THE KLAMATH RIVER RURAL BROADBAND INITIATIVE

Environmental Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs) Identified in the ISMND/EA	Implementing Actions	Monitoring/Reporting Requirements and Timing
Biological Resources (cont.)			
	<p>MM BIO-2: Measures to Avoid Impacts to Special-status Terrestrial Species: To avoid and minimize direct and indirect impacts on special-status terrestrial wildlife species, following protection measures shall be implemented:</p> <ol style="list-style-type: none"> 1. The name(s) and credentials of the qualified biologist(s) to act as construction monitors shall be submitted to CDFW/CPUC for approval at least 15 days before construction work begins. 2. Before the start of work, an approved biologist shall survey the active construction footprint for special-status mammal, amphibian and reptile species with the potential to be present, such as Humboldt marten, northern red-legged frog, and western pond turtle. 3. At the beginning of each workday that includes initial ground disturbance, including grading, excavation, and vegetation removal activities, the qualified biologist shall conduct on-site monitoring for the presence of these species in the area where ground disturbance or vegetation removal is planned. 4. All excavated or deep-walled holes or trenches greater than 2 feet deep shall be covered at the end of each workday using plywood, steel plates, or similar materials, or escape ramps shall be constructed of earth fill or wooden planks to allow animals to exit. Before such holes are filled, they shall be thoroughly inspected for trapped animals. 5. If a special-status species is present within the construction area, work shall cease in the vicinity of the animal, and the animal shall be allowed to relocate of its own volition unless relocation is permitted by state and/or federal regulatory agencies. 6. The contractor shall provide closed garbage containers for the disposal of all trash items (e.g., wrappers, cans, bottles, food scraps). Before work sites are closed each day, the work sites shall be cleaned of litter, and the litter shall be placed in wildlife-proof garbage receptacles. Construction personnel shall not feed or otherwise attract any wildlife. No pets, excluding service animals, shall be allowed in construction areas. 7. For Humboldt marten, a seasonal operating limitation shall be applied to identified marten core habitat which intersects the alignment in Segments 4 and 5. In these areas, no ground-disturbing construction activities would be permitted during the breeding season of Humboldt marten (March 1 to July 31). 	<p>The Karuk Tribe and/or its designated qualified contractor to implement measure as defined.</p>	<p>Qualification/credentials to be provided at least 15 days prior to construction.</p> <p>Other actions to be implemented prior to and during construction as defined in MM BIO-2.</p> <p>CPUC mitigation monitor to verify and document compliance prior to and during construction.</p>

TABLE 6-1 (CONTINUED)
MITIGATION MONITORING, REPORTING, AND COMPLIANCE PROGRAM FOR THE KLAMATH RIVER RURAL BROADBAND INITIATIVE

Environmental Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs) Identified in the ISMND/EA	Implementing Actions	Monitoring/Reporting Requirements and Timing
Biological Resources (cont.)			
	<p>MM BIO-3: Avoid Impacts to Special-status Bats: Prior to any construction, a qualified bat biologist shall conduct a pre-construction survey for roosting bats in trees to be removed or pruned and structures to be demolished. If no roosting bats are found, no further action is required. If an active bat roost is found, the following measures shall be implemented to avoid impacts on roosting bats.</p> <ol style="list-style-type: none"> 1. If active maternity roosts are found in trees that shall be removed or demolished as part of construction, tree removal or demolition of that structure shall commence before maternity colonies form (generally before March 1) or after young are flying (generally by July 31). Active maternal roosts shall not be disturbed. 2. If a non-maternal roost of bats is found in a tree or structure to be removed or demolished as part of construction, the individuals shall be safely evicted, under the direction of a qualified bat biologist and with approval from CDFW. Removal of the tree or demolition of the structure should occur no sooner than two nights after the initial minor site modification (to alter airflow), under guidance of the qualified bat biologist. The modifications shall alter the bat habitat, causing bats to seek shelter elsewhere after they emerge for the night. On the following day, the tree or structure may be removed, in presence of the bat biologist. If any bat habitat is not removed, departure of bats from the construction area shall be confirmed with a follow-up survey prior to start of construction. 	<p>The Karuk Tribe and/or its designated qualified contractor to implement measure as defined.</p>	<p>Implement measure prior to construction involving tree pruning or removal activities. CPUC mitigation monitor to verify compliance.</p>
	<p>MM BIO-4: Avoid Impacts to Listed Birds</p> <ol style="list-style-type: none"> 1. To prevent noise and visual disturbance to nesting marbled murrelets and northern spotted owls, the Project would adhere to USFWS guidance on estimating effects of auditory and visual disturbance, and would have a seasonal operating limitation on all ground-disturbing construction activities along Bald Hills Road within the RNP in old-growth redwoods. No ground-disturbing construction activities would be permitted from March 1 through September 15, as shown in Figure 2. 2. Using the technical assistance response from the USFWS (2022), the proponent would conduct NSO protocol surveys the nesting season prior to construction where prior actionable observations¹ are within or very close to the ¼-mile noise buffer along the project alignment in Segment 1. In areas where activity centers have substantial and recent survey data showing abandonment by NSO, or are more than ¼ mile from the project alignment and had no actionable observations within the ¼-mile buffer during any survey, the proponent would not conduct initial surveys. Where the proponent conducts protocol surveys, any actionable observation within ¼-mile of the construction alignment shall be identified. A no-construction buffer would be established along the project alignment of ¼-mile on either side of the identified actionable observation from February 1 to July 31 that would be applicable for the year the survey was conducted and the following year until additional surveys were conducted. If protocol-level surveys conducted the following nesting season indicate 	<p>The Karuk Tribe and/or its designated qualified contractor to implement measure as defined.</p>	<p>Surveys to be conducted prior to construction, as appropriate.</p> <p>Implement measure as defined to limit construction in areas where seasonal operating limits are in effect.</p>

¹ An “actionable observation” is an observation of a pair (including with nesting behavior but no nest found) or a nest (including a nest with young), USFWS (2022)

TABLE 6-1 (CONTINUED)
MITIGATION MONITORING, REPORTING, AND COMPLIANCE PROGRAM FOR THE KLAMATH RIVER RURAL BROADBAND INITIATIVE

Environmental Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs) Identified in the ISMND/EA	Implementing Actions	Monitoring/Reporting Requirements and Timing
Biological Resources (cont.)			
	<p>no actionable observations within ¼ mile, construction activity may proceed during the season of the survey and the following nesting season. Limited operating seasons would remain in place if actionable observations are recorded or if subsequent surveys are not conducted.</p> <p>3. Additional limited operating season areas may be identified for NSO for historically occupied activity centers where the applicant does not conduct initial protocol surveys. Those limited operating seasons, from February 1 to July 31, would be defined along the project alignment ¼ mile on either side of historic actionable observations. In those areas, the proponent would accept the limited operating season for the duration of construction or conduct protocol surveys to determine presence of NSO. If surveys are subsequently conducted and no NSO are present, the limiting operating season would not apply in the following nesting season.</p> <p>4. Where there are multiple limited operating seasons imposed in an area, the limitation would apply from the first day of the earliest restriction to the last day of the latest restriction for each of the two species.</p>		
Cultural Resources			
<p>Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to §15064.5; disturbance of human remains; or an adverse change in the significance of a tribal cultural resource defined in PRC §21074.</p>	<p>APM CR-1: An archeologist meeting the Secretary of the Interior’s Professional Qualifications Standards for Archaeology with expertise in California archaeology (qualified archaeologist) will perform or direct all cultural resources work with trained assistants.</p>	<p>The Karuk Tribe and/or its designated qualified contractor to implement measure as defined.</p>	<p>Implement measure prior to and during construction. Qualified monitor to document compliance CPUC to verify compliance.</p>
	<p>APM CR-2: Prior to any ground-disturbing activities, a qualified archaeologist, in consultation with the Yurok Tribe, Karuk Tribe, Wiyot Tribe, and the Applicant, will develop a Cultural Resources Management Plan (CRMP). The CRMP will include provisions for establishing Archaeologically Sensitive Areas (ASAs), specific locations where directional drilling is required in the vicinity of known archaeological sites, and an Archaeological Monitoring Plan (AMP) that provides monitoring protocols for the Project. The CRMP will also establish management guidelines for protecting archaeological sites from future impacts. The CRMP will include the following specific components:</p> <ol style="list-style-type: none"> 1. Maps of known archaeological sites with a reference system so that clear boundaries are established in relation to the Project. 2. Maps with a buffer area of 100 feet around the boundaries of known sites establishing ASAs. 3. Provisions for fencing or other protective measures of ASAs. 4. Provisions for the removal of identifying markers for ASAs after construction in the area is complete. 5. Maps of specific locations where directional drilling will be required in the vicinity of known archaeological sites and provision for installation methods, including appropriate depth of directional drilling. 	<p>The Karuk Tribe and/or its designated qualified contractor to implement measure as defined.</p>	<p>Implement measure prior to and during construction. Qualified monitor to verify compliance.</p> <p>CRMP, AMP, and worker awareness training to be developed and implemented prior to and during construction involving ground disturbance. Training shall be repeated for all new construction personnel and evidence of such provided to CPUC. CPUC mitigation monitor to review training materials and logs to verify compliance.</p>

TABLE 6-1 (CONTINUED)
MITIGATION MONITORING, REPORTING, AND COMPLIANCE PROGRAM FOR THE KLAMATH RIVER RURAL BROADBAND INITIATIVE

Environmental Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs) Identified in the ISMND/EA	Implementing Actions	Monitoring/Reporting Requirements and Timing
Cultural Resources (cont.)			
	<p>6. The outline of a worker cultural resources awareness training program that will be provided for all personnel involved in ground-disturbing activities. The program will detail the recognition and importance of archaeological resources, and procedures to follow should archaeological resources be encountered during construction.</p> <p>7. An AMP that includes provisions for monitoring during ground-disturbing activities, including the locations and duration of monitoring, the anticipated roles of monitors, and the reporting requirements.</p> <p>8. An Inadvertent Discovery Plan that includes actions to follow should an archaeological resource be encountered, including stopping work within 100 feet of the find, notifying the appropriate land management agency, and continuing the stop-work order until it can be evaluated by a qualified archaeologist and a Native American representative. The Inadvertent Discovery Plan will also include a research design and treatment plan to be instituted if a resource cannot be avoided. The research design and treatment plan will be completed in consultation with Native American representatives.</p> <p>9. Provisions that the California Public Utilities Commission (CPUC) and BIA, together with the appropriate land managing agency if on federal land, will determine whether avoidance is feasible in light of factors such as the nature of the inadvertent discovery, Project design, costs, and other considerations. If avoidance is not feasible, other appropriate measures (e.g., data recovery as agreed upon between CPUC, BIA, the appropriate land managing agency if on federal land, the archaeological consultant, and Native American representatives) will be instituted.</p>		
	<p>APM CR-3: If human remains are discovered, construction will be halted, and the coroner will be notified. If it is determined that the remains meet NAGPRA criteria, measures specified in the NAGPRA regulations will be followed on federal lands.</p>	<p>The Karuk Tribe and/or its designated contractor to implement measure as defined.</p>	<p>Implement measure during construction. CPUC mitigation monitor to verify compliance.</p>
	<p>APM CR-4: The Karuk Tribe will supply Native American Monitors in the Karuk Ancestral Territory the Yurok Tribe will supply Native American Monitors in the Yurok Ancestral Territory, and the Wiyot Tribe will supply Native American Monitors in the Wiyot Ancestral Territory. Where ancestral territories are mapped as overlapping, monitors from both tribes will work in tandem.</p>	<p>The Karuk Tribe and Yurok Tribe to implement measure as defined and will coordinate with the Wiyot Tribe, as applicable.</p>	<p>Implement measure during construction. CPUC mitigation monitor to verify compliance.</p>
	<p>APM CR-5: Where depth of archaeological resources in highly sensitive areas can be known or assumed, directional drilling may be required by land managing agencies to avoid cultural resources. Directional drilling depths should be at least two feet below known maximum depth of cultural resources. If fractured bedrock must be drilled, preventing the inadvertent release of drilling fluids (inert clays and water) cannot be guaranteed.</p>	<p>The Karuk Tribe and/or its designated contractor to implement measure as defined or as directed through water quality permit conditions.</p>	<p>Implement measure during construction involving directional drilling activities. Qualified monitor to verify compliance.</p>

TABLE 6-1 (CONTINUED)
MITIGATION MONITORING, REPORTING, AND COMPLIANCE PROGRAM FOR THE KLAMATH RIVER RURAL BROADBAND INITIATIVE

Environmental Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs) Identified in the ISMND/EA	Implementing Actions	Monitoring/Reporting Requirements and Timing
Cultural Resources (cont.)			
	<p>MM CUL-1: Segment 1 North</p> <p>The Karuk Resources Advisory Board concurred that ground disturbance in areas of anchor replacement is a minor action, however, within the three identified archaeological sites, a monitor should be used; outside of identified cultural sites, pre-inspection and post-inspection should be sufficient.</p> <p>A pole replacement was acknowledged to be a more ground-disturbing activity and a monitor should be present for such an operation within the APE. If a pole needs to be replaced within identified cultural site, then all attempts should be made to re-use the existing hole for placement of a new utility pole. Tribal monitoring should be coordinated through the Karuk THPO</p>	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. Qualified monitor to verify compliance.
	<p>MM CUL-2: Segment 1 North</p> <p>Ground disturbing activities should not be done during Karuk ceremonial times. Caltrans issues encroachment permits for work on the highway, and those permits will exclude ceremony dates.</p>	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. Qualified monitor to verify compliance.
	<p>MM CUL-3: Segment 2 South</p> <p>It is recommended that a tribal monitor be afforded an opportunity to observe all ground disturbing activities within Yurok territory. For the purposes of this Project, this area extends from MP 26.5 in Segment 1 downriver throughout the Klamath River corridor, over Bald Hills Road, south on U.S. 101 and through industrial timberland, to the crossing of Little River. The Project route passes through and near several ethnographic villages, archaeological sites, as well as the Bald Hills Archaeological District, Lyons Ranches Historic District, and the Bald Hills Ethnographic District and the Yurok Tribe requests monitoring regardless of resource location, significance evaluations, or NHPA Section 106 findings. Tribal monitoring should be coordinated through the Yurok THPO.</p> <p>Redwood National Park also requests that archaeological monitoring occur within all three Districts: Bald Hills Archaeological District, Lyons Ranches Historic District, and the Bald Hills Ethnographic District and that a discovery plan of action be in place, specifically to address trenching beneath paved surfaces, where field survey was unable to be completed, and to address secondary deposits that may be encountered within the inboard ditch.</p>	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. Qualified monitor to verify compliance.
	<p>MM CUL-4: CA-HUM-443</p> <p>This reach along Bald Hills Road, within the archaeology site appears to be cut below the historical ground surface and trenching of the inboard ditch or within the road bed would immediately enter deeper strata and the Franciscan formation bedrock. Trenching within the roadbed will be conducted at locations where the roadside ditch is either filled with vegetation or exhibits shallow topography and surface bedrock exposure is not visible. These installation methods will ensure adverse impacts to the archaeological site are avoided. The presence of archaeological monitors during trenching into the paved road surface will also allow for a phased approach of identification efforts at these locations.</p>	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. Qualified monitor to verify compliance.

TABLE 6-1 (CONTINUED)
MITIGATION MONITORING, REPORTING, AND COMPLIANCE PROGRAM FOR THE KLAMATH RIVER RURAL BROADBAND INITIATIVE

Environmental Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs) Identified in the ISMND/EA	Implementing Actions	Monitoring/Reporting Requirements and Timing
Cultural Resources (cont.)			
	<p>MM CUL-5: CA-HUM-446/H</p> <p>The Project shall utilize the inboard ditch or trenching of the road bed and would immediately enter the Franciscan formation bedrock, thereby avoiding the archaeological site.</p>	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. Qualified monitor to verify compliance.
	<p>MM CUL-6: CA-HUM-448</p> <p>The Project shall utilize the ditch along the eastern edge of Bald Hills Road, where it is deeply cut below the ridgeline and the archaeological site, thereby avoiding the archaeological site.</p>	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. Qualified monitor to verify compliance.
	<p>MM CUL-7: CA-HUM-452</p> <p>The Project shall utilize the inboard ditch or trenching of the road bed and would immediately enter the Franciscan formation bedrock, thereby avoiding the archaeological site.</p>	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. Qualified monitor to verify compliance.
	<p>MM CUL-8: CA-HUM-625</p> <p>The Project shall utilize boring through this area to ensure that installation does not impact surface strata, thereby avoiding the archaeological site.</p>	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. Qualified monitor to verify compliance.
	<p>MM CUL-9: Lyons Ranches Historic District</p> <p>The Project through the District will avoid the use of buried fiber line placards or other above ground marker. The historical setting and feeling of the District shall be maintained and no above ground visual intrusions should be introduced as a way to mark the route of the underground fiber optic utility. Junction boxes or other infrastructure should also be at or below grade, and not made visible to park users.</p>	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. Qualified monitor to verify compliance.
	<p>MM CUL-10: P-12-002326</p> <p>Trenching at this location shall only be done on the east side of the road, thereby avoiding the archaeological site.</p>	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. Qualified monitor to verify compliance.
	<p>MM CUL-11: CA-HUM-668 (P-12-000659)</p> <p>The Project shall utilize trenching beneath the site where bedrock is visible and boring underneath the ditch where depth of bedrock is unclear, thereby avoiding the archaeological site.</p>	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. Qualified monitor to verify compliance.
	<p>MM CUL-12: CA-HUM-669 (P-12-000660)</p> <p>Due to the lack of visible Franciscan outcrops and heavy vegetation, the Project will utilize directional drilling at a depth of at least 5 feet below the surface within the site boundary.</p>	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. Qualified monitor to verify compliance.
	<p>MM CUL-13: P-12-001877 and REDW-2009-01</p> <p>The Project shall utilize trenching of the road bed, thereby avoiding the archaeological sites.</p>	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. Qualified monitor to verify compliance.
	<p>MM CUL-14: Staging Area #403</p> <p>Staging area #403 shall not be developed on undisturbed grassland. Nearby roadside pullouts or other previously disturbed areas would be used as alternatives.</p>	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. Qualified monitor to verify compliance.

TABLE 6-1 (CONTINUED)
MITIGATION MONITORING, REPORTING, AND COMPLIANCE PROGRAM FOR THE KLAMATH RIVER RURAL BROADBAND INITIATIVE

Environmental Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs) Identified in the ISMND/EA	Implementing Actions	Monitoring/Reporting Requirements and Timing
Cultural Resources (cont.)			
	MM CUL-15: CRF-BHR-09 The site shall be flagged to ensure that Project equipment operates only on the immediate edge of the road	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. Qualified monitor to verify compliance.
	MM CUL-16: Archaeological Field Markers All archaeological site boundaries shall be marked in the field (i.e. flagging) prior to Project implementation and removed after construction is completed.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. Qualified monitor to verify compliance.
Energy Conservation			
	No mitigation required.		
Geology and Soils and Paleontological Resources			
	APM GEN-1: Environmental Compliance Monitors hired by the Tribe will monitor construction activities and will report to the Tribe and to the agencies regarding construction compliance with permit terms and conditions. Monitoring activities would be structured in accordance with an Environmental Compliance Management Plan, developed by the Tribe and approved by the lead state and federal agencies prior to construction	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure prior to and during construction.
	APM GEN-3: RNP policies and regulations will apply within the RNP. Ground-disturbing activities will comply with listed seasonal constraints and other requirements.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction in RNP. CPUC mitigation monitor to verify compliance.
	APM GEN-4: As part of the Karuk Tribe's environmental compliance commitment, the Construction Contractor(s) will be contractually bound to comply with all laws, regulations, and permit requirements, including the mitigation measures and other specific stipulations and methods that are developed as part of the NEPA/CEQA process.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. CPUC mitigation monitor to verify compliance.
	APM GEN-5: Directional drilling will be used where needed and approved to avoid impacts to water, biological and cultural resources.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction activities involving directional drilling. CPUC mitigation monitor to verify compliance.
	APM GEN-9: The Construction Contractor will be required to develop and implement a Worker Environmental Awareness Program (WEAP).	The Karuk Tribe and/or its designated contractor to provide training materials to CPUC and implement measure as defined.	Training shall be provided prior to and during construction and repeated for all new construction personnel and evidence of such provided to CPUC. CPUC mitigation monitor to review training materials and verify compliance.
	APM SOIL-1: Disturbance of soils and rocks and vegetation removal will be limited to the minimum area necessary for access and construction.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. CPUC mitigation monitor to verify compliance.

TABLE 6-1 (CONTINUED)
MITIGATION MONITORING, REPORTING, AND COMPLIANCE PROGRAM FOR THE KLAMATH RIVER RURAL BROADBAND INITIATIVE

Environmental Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs) Identified in the ISMND/EA	Implementing Actions	Monitoring/Reporting Requirements and Timing
Geology and Soils and Paleontological Resources (cont.)			
	APM WET-3: If trench dewatering is needed, it will be completed per the Caltrans BMP NS-2 specifications and Field Guide to Construction Site Dewatering.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. CPUC mitigation monitor to verify compliance.
	APM WATER-1: The construction contractor will be required to develop and file a SWPPP and to comply with the permit conditions as issued by the State Water Resources Control Board, Region 1.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure prior to and during construction. CPUC mitigation monitor to review SWPPP and verify compliance.
	APM OM-2: The Tribe will provide crews and contractors with maps showing environmentally sensitive areas; these maps will include work zones as well as ROW areas where ground disturbance will be avoided.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure prior to and during construction. CPUC mitigation monitor to verify compliance.
Greenhouse Gas Emissions			
	No mitigation required.		
Hazards and Hazardous Materials			
Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.	<p>APM HAZ-1: The Applicant shall prepare a Hazardous Materials Management Plan (HMMP) for approval by the CPUC. The HMMP shall be prepared and submitted for approval at least 30 days prior to the start of construction. The HMMP shall include, but not be limited to, the following requirements:</p> <ol style="list-style-type: none"> 1. The Applicant's Construction Contractor shall prepare a Hazardous Substance Control and Emergency Response Plan (Plan) and implement it during construction to ensure compliance with all applicable federal, state, and local laws and guidelines regarding the handling of hazardous materials. If the Project would result in the storage or handling of a Threshold Quantity or greater of a hazardous substance as defined by the California Hazardous Materials Release Response Plan and Inventory Law, the Plan shall include preparation and implementation of a Hazardous Materials Business Plan that describes the hazardous materials usage, storage, and disposal to the appropriate Certified Unified Program Agency. The Plan shall prescribe hazardous material handling procedures to reduce the potential for a spill during construction, or exposure of the workers or public to hazardous materials. The Plan shall also include appropriate response actions in the event that hazardous materials are released or encountered during excavation activities. The Plan shall be submitted to the CPUC for review and approval prior to the commencement of construction activities. The Plan shall require that the Applicant and/or its contractors shall implement construction best management practices including but not limited to the following: <ol style="list-style-type: none"> a. Follow manufacturer's recommendations on use, storage, and disposal of chemical products used in construction. b. Avoid overtopping construction equipment fuel gas tanks. c. Use tarps and oil-absorbent pads under vehicles when refueling to contain and capture any spilled fuel. d. During routine maintenance of construction equipment, properly contain and remove grease and oils. e. Properly dispose of discarded containers of fuels and other chemicals. 	The Karuk Tribe and/or its designated qualified contractor to implement measure as defined.	The HMMP shall be provided to CPUC at least 30 days prior to construction. CPUC Mitigation Monitor to verify compliance prior to construction.

TABLE 6-1 (CONTINUED)
MITIGATION MONITORING, REPORTING, AND COMPLIANCE PROGRAM FOR THE KLAMATH RIVER RURAL BROADBAND INITIATIVE

Environmental Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs) Identified in the ISMND/EA	Implementing Actions	Monitoring/Reporting Requirements and Timing
Hazards and Hazardous Materials (cont.)			
<p>Expose people or structures either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires</p>	<p>APM FIRE-1: Before the start of construction, the Applicant’s Construction Contractor will prepare a project-specific Construction Fire Prevention Plan (CFPP) to ensure the health and safety of construction workers and the public from fire-related hazards. Local fire departments shall be consulted during plan preparation and the CFPP will include fire safety measures as recommended by these departments. The CFPP shall list fire prevention and extinguishment procedures and specific emergency response and evacuation measures that would be followed during emergency situations. The CFPP also would provide smoking and fire-related rules, storage, and parking areas, require usage of spark arrestors on construction equipment, and fire-suppression tools and equipment. The CFPP shall include, but not be limited to, the following:</p> <ol style="list-style-type: none"> 1. Water tanks, water trucks, or portable water backpacks (where space or access for a water truck or water tank is limited) will be sited/available in the Project area for fire protection where fire hydrants are not available. 2. All construction vehicles shall have fire suppression equipment. 3. All construction workers shall receive training on the proper use of fire-fighting equipment and procedures to be followed in the event of a fire. 4. As construction may occur simultaneously at several locations, each construction site shall be equipped with fire extinguishers and fire-fighting equipment sufficient to extinguish small fires. 5. Construction personnel shall be required to park vehicles away from dry vegetation. 6. Prior to construction, contact and coordinate with the appropriate fire departments to determine the appropriate amounts of fire equipment to be carried on the vehicles and appropriate locations for the water tanks, water trucks, and/or water backpacks. The Applicant shall submit verification of its consultation with the appropriate fire departments to the CPUC. 7. The CFPP shall be submitted to CPUC staff for approval prior to commencement of construction activities and shall be distributed to all construction crew members prior to construction of the Project. 8. Cease work during Red Flag Warning events in areas where vegetation would be susceptible to accidental ignition by Project activities (such as welding or use of equipment that could create a spark). During Red Flag Warning events all non-emergency construction and maintenance activities will cease in affected areas. 	<p>The Karuk Tribe and/or its designated qualified contractor to implement measure as defined.</p>	<p>The Fire Plan shall be provided to CPUC at least 30 days prior to construction. Training will be repeated for all new construction personnel and evidence of such provided to CPUC. CPUC Mitigation monitor to verify compliance prior to construction.</p>
	<p>APM TRANS-1: Traffic control measures such as traffic control personnel, warning signs, lights, and barriers will be used during construction as specified in the encroachment permits from road managers to ensure safety and to minimize traffic congestion.</p>	<p>The Karuk Tribe and/or its designated contractor to implement measure as defined.</p>	<p>Traffic control to be implemented during construction. CPUC mitigation monitor to verify compliance.</p>

TABLE 6-1 (CONTINUED)
MITIGATION MONITORING, REPORTING, AND COMPLIANCE PROGRAM FOR THE KLAMATH RIVER RURAL BROADBAND INITIATIVE

Environmental Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs) Identified in the ISMND/EA	Implementing Actions	Monitoring/Reporting Requirements and Timing
Hydrology and Water Quality			
	APM AIR-1: Fugitive dust produced during construction will be controlled with watering as needed. Watering will only settle dust and will not create runoff.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure prior to and during construction. CPUC mitigation monitor to verify compliance.
	APM GEN-5: Directional drilling will be used where needed and approved to avoid impacts to water, biological, and cultural resources.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction activities involving directional drilling. CPUC mitigation monitor to verify compliance.
	APM REC-1: Final Cleanup: Final cleanup will ensure that all construction areas are free of any construction debris including, but not limited to: assembly scrap metals, oil or other petroleum-based liquids, construction wood debris, and worker-generated litter. Permanent erosion control devices will be left in place.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during and immediately following construction. CPUC mitigation monitor to verify compliance.
Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality	APM SOIL-1: Disturbance of soils and rocks, and vegetation removal will be limited to the minimum area necessary for access and construction.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. CPUC mitigation monitor to verify compliance.
	APM WATER-2: Construction industry standard practices and BMPs will be used for spill prevention and containment.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. CPUC monitor to verify compliance.
	APM WET-1: Wetland delineations will be performed prior to construction to support CWA Section 404 permitting and to minimize Project impacts. The delineation will identify both wetland and non-wetland waters of the United States that would be affected by the Project. The delineation will also provide sufficient information to support California permitting and will include delineation of wetland and non-wetland waters of the State of California.	The Karuk Tribe and/or its designated qualified contractor to implement measure as defined.	Wetland delineation to occur prior to any construction activities that could impact wetlands. CPUC mitigation monitor to review wetland delineation prior to construction..
	APM WET-2: Where impacts on wetlands are not avoidable, site-specific crossing plans and measures to mitigate impacts will be submitted to the appropriate regulatory agency, as well as the land managing agency. The Karuk Tribe will obtain all necessary permits prior to discharging dredged or fill material to the waters of the United States or state.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure prior to and during any construction activities that could impact wetlands. CPUC mitigation monitor to review permits for compliance.
	APM WET-3: If trench dewatering is needed, it will be completed per the CalTrans BMP NS-2 specifications and Field Guide to Construction Site Dewatering.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. CPUC mitigation monitor to verify compliance.
	APM HAZ-1: See Hazards and Hazardous Materials for text of measure.	The Karuk Tribe and/or its designated contractor to implement measure as defined	Applicant shall provide HMMP to CPUC at least 30-days prior to start of construction. CPUC mitigation monitor to verify compliance during construction.

TABLE 6-1 (CONTINUED)
MITIGATION MONITORING, REPORTING, AND COMPLIANCE PROGRAM FOR THE KLAMATH RIVER RURAL BROADBAND INITIATIVE

Environmental Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs) Identified in the ISMND/EA	Implementing Actions	Monitoring/Reporting Requirements and Timing
Land Use			
	APM GEN-1: Environmental Compliance Monitors hired by the Tribe will monitor construction activities and will report to the Tribe and to the agencies regarding construction compliance with permit terms and conditions. Monitoring activities will be structured in accordance with an Environmental Compliance Management Plan, developed by the Tribe and approved by the lead state and federal agencies prior to construction.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure prior to and during construction. Training shall be repeated for all new construction personnel and evidence of such provided to CPUC. CPUC mitigation monitor to review training materials and verify compliance.
	APM GEN-2: Forest Plan Standards and Guidelines (as amended) will apply on NFS lands. Ground-disturbing activities will comply with all Agency-wide, regional, and state BMPs.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. CPUC mitigation monitor to verify compliance.
	APM GEO-3: RNP policies and regulations will apply within the RNP. Ground-disturbing activities will comply with listed seasonal constraints and other requirements.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction in the RNP. CPUC mitigation monitor to verify compliance.
	APM GEN-4: As part of the Karuk Tribe's environmental compliance commitment, the Construction Contractor(s) will be contractually bound to comply with all laws, regulations, and permit requirements, including the mitigation measures and other specific stipulations and methods that are developed as part of the NEPA/CEQA process.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. CPUC mitigation monitor to verify compliance.
	APM SOIL-1: Disturbance of soils and rock and vegetation removal will be limited to the minimum area necessary for access and construction.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. CPUC mitigation monitor to verify compliance..
	APM OM-1: Before beginning an operations or maintenance project, KRRBI contractors or their subcontractors will clean all equipment that will operate off-road or disturb the ground. The entire vehicle or equipment will be cleaned at an off-site location.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	CPUC mitigation monitor to verify compliance during operation and maintenance activities.
	APM OM-2: The Tribe will provide crews and contractors with maps showing environmentally sensitive areas; these maps will include work zones as well as ROW areas where ground disturbance will be avoided.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	CPUC mitigation monitor to verify compliance during construction.
Minerals			
	No mitigation required.		

TABLE 6-1 (CONTINUED)
MITIGATION MONITORING, REPORTING, AND COMPLIANCE PROGRAM FOR THE KLAMATH RIVER RURAL BROADBAND INITIATIVE

Environmental Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs) Identified in the ISMND/EA	Implementing Actions	Monitoring/Reporting Requirements and Timing
Noise and Vibration			
Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards and established in the local general plan or noise ordinance, or applicable standards of other agencies.	<p>MM NOISE-1: To reduce daytime noise impacts due to construction of Segment 5, the Project proponent(s) shall be required to implement the following measures:</p> <ul style="list-style-type: none"> Equipment and trucks used for project construction shall use the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures, and acoustically-attenuating shields or shrouds, wherever feasible). Concrete saws shall be operated at least 30 feet from the nearest occupied residence, or shall be equipped with a noise attenuating shield or shroud that blocks the line of sight between the saw and the nearest residences. 	The Karuk Tribe and/or its designated contractor to implement measure as defined.	CPUC mitigation monitor to verify compliance during construction.
Population and Housing			
	No mitigation required.		
Public Services			
	APM FIRE-1: See Hazards and Hazardous Materials for text of measure.	The Karuk Tribe and/or its designated contractor to implement measure as defined	The Fire Plan shall be provided to CPUC at least 30 days prior to construction. Training will be repeated for all new construction personnel and evidence of such provided to CPUC. CPUC Mitigation monitor to verify compliance prior to construction.
	APM TRANS-1: Traffic control measures such as traffic control personnel, warning signs, lights, and barriers will be used during construction as specified in the encroachment permits from road managers to ensure safety and to minimize traffic congestion.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Traffic control to be implemented during construction. CPUC mitigation monitor to verify
	APM TRANS-2: Emergency vehicle access to private property will be maintained during construction.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. CPUC mitigation monitor to verify compliance.
Recreation			
	APM REC-1: Final Cleanup: Final cleanup will ensure that all construction areas are free of any construction debris including, but not limited to: assembly scrap metals, oil or other petroleum-based liquids, construction wood debris, and worker-generated litter. Permanent erosion control devices will be left in place.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	CPUC mitigation monitor to verify as soon as feasible following completion of construction.

TABLE 6-1 (CONTINUED)
MITIGATION MONITORING, REPORTING, AND COMPLIANCE PROGRAM FOR THE KLAMATH RIVER RURAL BROADBAND INITIATIVE

Environmental Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs) Identified in the ISMND/EA	Implementing Actions	Monitoring/Reporting Requirements and Timing
Transportation			
	APM GEN-6: Workers will be encouraged to carpool from housing to the work site each day.	The Karuk Tribe and/or its designated contractor to implement measure as defined, pending public health social distancing considerations.	Implement measure during construction, as feasible.
	APM TRANS-1: Traffic control measures such as traffic control personnel, warning signs, lights, and barriers will be used during construction as specified in the encroachment permits from road managers to ensure safety and to minimize traffic congestion.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Traffic control to be implemented during construction. CPUC mitigation monitor to verify
	APM TRANS-2: Emergency vehicle access to private property will be maintained during construction.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. CPUC mitigation monitor to verify compliance.
	APM TRANS-3: Roads negatively affected by construction and as identified by the agencies will be returned to preconstruction condition.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure as soon as feasible following completion of construction. CPUC mitigation monitor to verify compliance
Socioeconomics and Environmental Justice			
	No mitigation required		
Utilities and Service Systems			
	APM REC-1: Final Cleanup: Final Cleanup will ensure that all construction areas are free of any construction debris including, but not limited to: assembly scrap metals, oil or other petroleum based liquids, construction wood debris, and worker generated litter. Permanent erosion control devices will be left in place.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. CPUC mitigation monitor to verify compliance
	APM SOIL-1: Disturbance of soils and rocks and vegetation removal will be limited to the minimum area necessary for access and construction.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. CPUC mitigation monitor to verify compliance.
	APM WATER-2: Construction industry standard practices and BMPs will be used for spill prevention and containment.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. CPUC mitigation monitor to verify compliance
	APM WET-2: Where impacts on wetlands are not avoidable, site specific crossing plans and measures to mitigate impacts will be submitted to the appropriate regulatory agency, as well as the land managing agency. The Karuk Tribe will obtain all necessary permits prior to discharging dredged or fill material to the waters of the U.S. and state.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure prior to and during construction. CPUC mitigation monitor to verify compliance.
	APM WET-3: If trench dewatering is needed, it will be completed per the Caltrans BMP NS-2 specifications and Field Guide to Construction Site Dewatering.	The Karuk Tribe and/or its designated contractor to implement measure as defined.	Implement measure during construction. CPUC mitigation monitor to verify compliance.

TABLE 6-1 (CONTINUED)
MITIGATION MONITORING, REPORTING, AND COMPLIANCE PROGRAM FOR THE KLAMATH RIVER RURAL BROADBAND INITIATIVE

Environmental Impact	Applicant Proposed Measures (APMs) and Mitigation Measures (MMs) Identified in the ISMND/EA	Implementing Actions	Monitoring/Reporting Requirements and Timing
Wildfire			
<p>Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire</p>	<p>APM FIRE-1: See Hazards and Hazardous Materials for text of measure.</p>	<p>The Karuk Tribe and/or its designated qualified contractor to implement measure as defined.</p>	<p>The Fire Plan shall be provided to CPUC at least 30 days prior to construction. Training will be repeated for all new construction personnel and evidence of such provided to CPUC. CPUC Mitigation monitor to verify compliance prior to construction.</p>
	<p>APM TRANS-1: Traffic control measures such as traffic control personnel, warning signs, lights, and barriers will be used during construction as specified in the encroachment permits from road managers to ensure safety and to minimize traffic congestion.</p>	<p>The Karuk Tribe and/or its designated contractor to implement measure as defined.</p>	<p>Traffic control to be implemented during construction. CPUC mitigation monitor to verify</p>
	<p>APM TRANS-2: Emergency vehicle access to private property will be maintained during construction.</p>	<p>The Karuk Tribe and/or its designated contractor to implement measure as defined.</p>	<p>Implement measure during construction. CPUC mitigation monitor to verify compliance.</p>

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