Final Environmental Impact Statement

Western
AREA POWER
ADMINISTRATION

Trinity Public Utilities District Direct Interconnection Project

Western Area Power Administration – Sierra Nevada Region

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Trinity EIS

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COVER SHEET

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ABSTRACT: The Western Area Power Administration (Western), part of the U.S. Department of Energy (DOE), prepared an environmental impact statement (EIS) on the construction and operation of proposed power transmission facilities in Trinity County, California. The U.S. Forest Service (USFS), the Bureau of Land Management (BLM), and the Bureau of Reclamation (Reclamation) participated in the preparation of the EIS, which addresses the proposed removal of about 5.3 mi of 12-kilovolt (kV) distribution line and the construction and operation of about 16 mi of new 60-kV transmission line, a tap structure and associated equipment, and a new switchyard. The EIS addresses the environmental impacts of the proposed project. Western's EIS process complied with the National Environmental Policy Act (NEPA; see volume 42 of *United States Code* [42 U.S.C.] §§ 4321–4347, as amended), Council on Environmental Quality regulations for implementing NEPA (title 40, parts 1500–1508 of the *Code of Federal Regulations* [40 CFR parts 1500–1508]), and DOE NEPA implementing procedures (10 CFR part 1021). Western's preferred alternative is the proposed action as described in the EIS; other than the no action alternative, no other viable reasonable alternatives were identified. Questions about this final EIS should be sent to Western at the address below.

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NOTATION

ACRONYMS AND ABBREVIATIONS

AADT	annual average daily traffic
AC	alternating current
ACGIH	American Conference of Governmental Hygienists
ACHP	Advisory Council on Historic Preservation
ACS	Aquatic Conservation Strategy
ACSR	aluminum conductor steel-reinforced
AIRFA	American Indian Religious Freedom Act
AMA	American Medical Association
APCD	air pollution control district
APE	area of potential effects
ARPA	Archaeological Resources Protection Act
ATCM	Airborne Toxic Control Measure
AWSC	all-way stop control
BA	Biological Assessment
BD	brush disposal
BLM	Bureau of Land Management
BMP	best management practice
B.P.	before present
BPA	Bonneville Power Administration
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
Cal/EPA	California Environmental Protection Agency
CalifDOC	California Department of Commerce
Caltrans	California Department of Transportation
CARB	California Air Resources Board
CASQA	California Stormwater Quality Association
CBD	Center for Biological Diversity
CCAA	California Clean Air Act
CDFG	California Department of Fish and Game
CDP	Census-Designated Place
CDWR	California Department of Water Resources
CEQ	Council on Environmental Quality
CEQA	California Environmental Quality Act
CFR	*Code of Federal Regulations*
CGS	California Geological Survey
CNDDB	California Natural Diversity Database
CNEL	community noise equivalent level
CNPS	California Native Plant Society
CO	carbon monoxide

COM	construction, operation, and maintenance
CR	County Route
CRA	California Resources Agency
CVP	Central Valley Project
CWA	Clean Water Act
CWE	cumulative watershed effects
DBH	diameter at breast height
DC	direct current
DOE	U.S. Department of Energy
DOF	California Department of Finance
DOI	U.S. Department of the Interior
DOT	U.S. Department of Transportation
DPH	California Department of Public Health
DPM	diesel particulate matter
EA	environmental assessment
EC50	median effective concentration
EFH	essential fish habitat
EIS	environmental impact statement
EJ	environmental justice
ELF	extremely low frequency
EMF	electric and magnetic fields
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EPM	environmental protection measure
EPRI	Electric Power Research Institute
ERA	equivalent roaded area
ESA	Endangered Species Act; also environmental site assessment
ESI	environmental site investigation
ESU	Evolutionarily Significant Unit
FAA	Federal Aviation Administration
FEMA	Federal Emergency Management Agency
FERC	Federal Energy Regulatory Commission
FLPMA	Federal Land Policy and Management Act
FR	*Federal Register*
GLO	General Land Office
GPS	global positioning system
HAZCOM	hazardous communications
HCM	Highway Capacity Manual
HHSA	California Health and Human Services Agency
HMB	hazardous material business
HR	hydrologic region

H_2S	hydrogen sulfide
HUC	hydrologic unit code
IBWC	International Boundary and Water Commission
ICNIRP	International Commission on Non-Ionizing Radiation Protection
IEEE	Institute of Electrical and Electronics Engineers
IITRI	Illinois Institute of Technology Research Institute
ISO	independent system operator
IVM	*Integrated Vegetation Management Environmental Guidance Manual*
KDMM	Kentucky Department of Mines and Minerals
KOP	key observation point
LC50	lethal concentration 50
LD50	lethal dose 50
L_{dn}	day-night average sound level
L_{eq}	equivalent-continuous sound level
L_{max}	maximum sound level
LOS	level of service
LRMP	Land and Resource Management Plan
MAP	mitigation action plan
MIS	management indicator species
MSDS	Materials Safety Data Sheet
msl	mean sea level
NAAQS	National Ambient Air Quality Standards
NAGPRA	Native American Graves Protection and Repatriation Act
NAHC	Native American Heritage Commission
NCAB	North Coast Air Basin
NCDC	National Climatic Data Center
NCRWQCB	North Coast Regional Water Quality Control Board
NCUAQMD	North Coast Unified Air Quality Management District
NEPA	National Environmental Policy Act
NERC	North American Electric Reliability Council
NESC	National Electrical Safety Code
NFMA	National Forest Management Act
NFS	National Forest System
NHPA	National Historic Preservation Act
NIEHS	National Institute of Environmental Health Sciences
NMFS	National Marine Fisheries Service
NO_2	nitrogen dioxide
NOA	Notice of Availability
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System

NPS	National Park Service
NRA	National Recreation Area
NRC	National Research Council
NRCS	Natural Resources Conservation Service
NRHP	*National Register of Historic Places*
NSO	northern spotted owl
NWFP	Northwest Forest Plan
O_3	ozone
OHV	off-highway vehicle
OHWM	ordinary high water mark
OSHA	Occupational Safety and Health Administration
OTA	Office of Technology Assessment
PA	Programmatic Agreement
PERP	portable equipment registration program
PG&E	Pacific Gas and Electric Company
PGA	peak ground acceleration
P.L.	Public Law
$PM_{2.5}$	fine particulate matter (mean aerodynamic diameter of 2.5 μm or less)
PM_{10}	respirable particulate matter (mean aerodynamic diameter of 10 μm or less)
PPE	personal protective equipment
PSD	Prevention of Significant Deterioration
PSOM	power systems operation manual
PUD	Public Utilities District
Reclamation	Bureau of Reclamation
RMP	Resource Management Plan
ROD	Record of Decision
ROS	Recreation Opportunity Spectrum
ROW	right-of-way
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SNR	Sierra Nevada Region
SO_2	sulfur dioxide
SONCC	Southern Oregon/Northern California Coast
SOPA	Schedule of Proposed Actions
SPCC	spill prevention control and countermeasures
SPI	Sierra Pacific Industries
SQS	soil quality standard
SR	State Route
SRI	soil resource inventory
Stat.	*Statutes at Large*

STNF	Shasta-Trinity National Forest
SUP	Special Use Permit
SWPP	stormwater pollution prevention
SWRCB	State Water Resources Control Board
TCDOT	Trinity County Department of Transportation
TCP	traditional cultural property
TMDL	total maximum daily load
TOC	threshold of concern
TPZ	Timber Production Zone
TRD	Trinity River Division
TRMU	Trinity River Management Unit
TWSC	two-way stop control
USACE	U.S. Army Corps of Engineers
U.S.C.	*United States Code*
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VLF	very low frequency
VOC	volatile organic compound
VQO	visual quality objective
VRM	Visual Resource Management
WCC	watershed condition class
Western	Western Area Power Administration
WRCC	Western Regional Climate Center
WSR	Wild and Scenic River
WWCMLD	West Weaver Creek Mining Landscape District

UNITS OF MEASURE

°C	degree(s) Celsius
dB	decibel(s)
dBA	A-weighted decibel(s)
dBC	C-weighted decibel(s)
°F	degree(s) Fahrenheit
ft	foot (feet)
ft^2	square foot (feet)
G	gauss
gal	gallon(s)
Hz	hertz
in.	inch(es)
kg	kilogram(s)
km	kilometer(s)

kV	kilovolt(s)
kW	kilowatt(s)
L	liter(s)
m	meter(s)
m^3	cubic meter(s)
mA	milliampere(s)
mg	milligram(s)
mG	milligauss
mi	mile(s)
mi^2	square mile(s)
mmHg	millimeter(s) of mercury
mph	mile(s) per hour
Pa	pascal(s)
ppbv	part(s) per billion by volume
ppmv	part(s) per million by volume
s	second(s)
V	volt(s)
yd	yard(s)
μg	microgram(s)
μm	micrometer(s)
μPa	micropascal(s)

EXECUTIVE SUMMARY

This Trinity Public Utilities District (PUD) Direct Interconnection Project Environmental Impact Statement (EIS), prepared under the National Environmental Policy Act of 1969 (NEPA), presents the Western Area Power Administration's (Western's) analysis of the environmental impacts of proposed transmission line additions and improvements identified for the proposed action, also referred to as the project, and alternatives.

Western proposes to construct the Trinity PUD Direct Interconnection Project. The project objective is to enhance the reliability of service for the customers of the Trinity PUD by establishing a new direct interconnection with Western's Central Valley Project (CVP) transmission system. The project would be located entirely within Trinity County, California, and would include three main segments:

- Segment 1 includes the removal of about 5.3 mi of existing 12-kV distribution line from Trinity Power Plant at Trinity Dam to a tap point about 0.75 mi west of Lewiston Dam and the construction of a new 60-kV transmission line to replace the 12-kV line on an expansion of the existing right-of-way (ROW). The total length of Segment 1 would be 6.5 mi.

- Segment 2 includes construction of a tap structure with three-way switch equipment on the new 60-kV transmission line at the location near Lewiston Dam, and a radial 1.2-mi tap line south to the existing Lewiston Substation on Trinity Dam Road, parallel to an existing distribution line.

- Segment 3 includes construction of a new 60-kV transmission line on a new ROW from the tap point west about 8.5 mi to the proposed new Weaverville Switchyard.

- The project also includes the construction of the new Weaverville Switchyard, which would be located about 2 mi south of Weaverville on the east side of Highway 299, the improvement of several miles of existing access roads, and the construction of approximately 4.4 mi of new access roads.

The role of an EIS is to inform decision makers and the public of the environmental impacts associated with a project and to provide reasonable alternatives. An EIS documents the analysis and evaluation conducted to determine the impacts to the human environment that would result from implementing the project and reasonable alternatives. This EIS will be used by Federal officials in conjunction with other relevant material to plan actions and make decisions concerning the project. Preparation of this EIS involves the cooperation of Western, the U.S. Forest Service (USFS), Bureau of Land Management (BLM), and Bureau of Reclamation (Reclamation). Western is the lead Federal agency, and USFS, BLM, and Reclamation are cooperating agencies. The EIS is intended to satisfy the requirements of NEPA for each Federal agency's decision related to the siting, construction, operation, and maintenance of the project. The decisions to be made by Western, USFS, BLM, and Reclamation regarding the project will be issued following the Final EIS in the form of separate Records of Decision (ROD) for each agency.

WESTERN'S BACKGROUND

Western delivers reliable, cost-based hydroelectric power and related services within the central and western United States. Western is one of four power marketing administrations within the U.S. Department of Energy (DOE), whose role is to market and transmit electricity from multiuse water projects. Western's transmission system carries electricity from power plants operated by Reclamation, the U.S. Army Corps of Engineers, and the International Boundary and Water Commission.

Western's service area covers 1.3 million mi^2, and its wholesale power customers provide service to millions of consumers in 15 western states. Western operates and maintains more than 17,000 mi of transmission lines from its four regional offices. The Trinity County area is within Western's Sierra Nevada Region (SNR). The SNR maintains and operates numerous substations and more than 1,400 mi of transmission lines.

NEED FOR THE PROPOSED ACTION

The Trinity PUD is a small utility district in Northern California serving approximately 16,000 consumers in a 2,200-mi^2 area. The Trinity PUD is directly connected to the California Independent System Operator (ISO)-controlled electrical grid by 60-kV transmission facilities and a 115-kV transmission line. Pacific Gas and Electric Company (PG&E) owns and maintains the 115-kV transmission line. Although transmitted through the PG&E system, Trinity PUD receives 100% of its power from Western.

Consumers in the Trinity PUD service area routinely experience nearly 20,000 consumer hours in outages per year. In the winter, many of the outages last three to four days. PG&E has had a difficult time restoring service due to the remote location and rough terrain. The purpose of the project is to improve the system reliability by providing a shorter, new direct interconnection with Western's transmission system at Trinity Power Plant.

PUBLIC INVOLVEMENT

Public involvement is a vital part of the decision-making process for an EIS. Western developed a public involvement program that provides multiple opportunities for public comment during the EIS process. Opportunities for the public to obtain information about and comment on the project occur throughout the entire EIS process; they include newsletters, public scoping meetings, public comment hearings, review of the Draft EIS, and a public comment period of at least 45 days. Public comments are evaluated by Western and the cooperating agencies and applied to alternative formulation, alternative evaluation, impact assessment, and the decision-making process.

The public involvement program is intended to guide Western through a collaborative, systematic, decision-making process with four primary purposes:

1. Share information with the interested public,

2. Gather information from the public,

3. Identify public concerns and issues, and

4. Develop and maintain credibility.

Western designed the public participation process to (1) heighten public awareness and encourage open communication throughout the development of the EIS; (2) be flexible and responsive to the issues and needs of the public, Western's customers, and public agencies; (3) solicit input on the scope of issues that should be addressed in the Draft EIS; and (4) identify significant issues related to the project.

Public scoping meetings were held in Weaverville and Redding, California, in July 2006. The Draft EIS was circulated to Federal, State, regional, and local agencies and to interested individuals and organizations that might have wished to review and comment on it. Publication of the Draft EIS marked the beginning of a 45-day public review period that ended on March 26, 2007, during which Western received written comments

Western held public hearings during the Draft EIS review period on March 6, 2007, at the Best Western Victorian Inn in Weaverville, California, and on March 7, 2007, at the La Quinta Inn in Redding, California. The hearings were part of the Western's continuing efforts to provide opportunities for public participation in the decision-making process and to meet the objectives of such participation, as listed above.

Western received 15 written comment letters that represented 13 different individuals and public and private organizations. Two individuals also provided comments orally at the public hearing in Weaverville. No members of the public attended the hearing in Redding. Appendix G of this EIS contains an index of the persons and organizations that submitted written comments as well as an index listing the persons who provided oral comments at the public hearing. It also contains the comment letters reproduced in their entirety, with individual comments identified by numbered sidebars. Western's responses to the comments are provided on the right-hand facing pages. A transcript of the public hearing is also provided in appendix G, with individual comments treated in a similar fashion.

A number of issues pertaining to the analyses in Draft EIS were raised in public comments. Among these issues were:

- Concerns regarding erosion control to prevent the sedimentation of streams as a result of construction traffic going over stream crossings,

- Specific permitting and mitigation measures addressing such erosion,

- Estimation of the extent of direct and cumulative impacts from the proposed project, and

- Analysis of impacts to the northern spotted owl (*Strix occidentalis caurina*).

Several modifications were made to the Draft EIS to address these issues; these are described in the respective responses to the comments.

In addition to the public comment process described above, revisions were made in consultation with technical staff from USFS, BLM, and Reclamation, the cooperating agencies in preparing the EIS. Additional analyses and clarifications were made in the assessments of soil erosion, geology, watershed impacts, and herbicide risks. Additional revisions were made after technical and editorial review. Neither these revisions, nor those resulting from agency consultation, affected the conclusions of the Draft EIS; they were made to address the technical quality of the document. Content-related changes to the Draft EIS text are identified with a vertical line in the margin of the page. The agency consultation and technical review process and resultant modifications are described in appendix F.

Following the receipt of comments and the close of the public comment period, Western prepared this Final EIS, which considers and responds to comments received on the Draft EIS.

ALTERNATIVES CONSIDERED AND DISMISSED

Western considered alternatives during the project planning process. System and route alternatives, as described below, were considered prior to defining the proposed action. Among Western's planning objectives were to locate the new transmission line along the shortest route with the fewest landowners and to utilize the existing transmission corridor and access roads to the maximum extent possible. The proposed action met the purpose and need of the participating agencies.

System Alternatives

Western examined four main system alternatives to the proposed action:

- System Alternative 1 consisted of parallel Western and PG&E transmission lines via a new 230-to 60-kV transmission interconnection between Western's 230- to 60-kV transmission system at Trinity Dam and the Trinity PUD's Douglas City 60-kV Substation.

- System Alternative 2 was the same as system alternative 1, except that Western's and PG&E's transmission lines would not be operated in parallel. The two lines would be isolated via a set of disconnect switches located between PG&E's Trinity Substation and Trinity PUD's Mill St. Substation.

- System Alternative 3 would have Western's and PG&E's transmission lines paralleled via an interconnection near Western's 230-kV J.F. Carr Substation. This design would consist of looping PG&E's Cottonwood-Trinity 115-kV transmission line into a new 230/115-kV substation in or adjacent to Western's Carr Substation.

- System Alternative 4 would be a pair of parallel Western and PG&E transmission lines. It would include looping PG&E's Cascade-Lewiston 60-kV transmission line into a new 230/60-kV substation in or adjacent to Western's J.F. Carr 230-kV Substation.

Routing Alternatives

Western examined four main routing alternatives to the proposed action:

- Routing Alternative 1 was an alternative alignment of Segment 1, from the Trinity Power Plant to the Lewiston Substation. With this alternative alignment, the line would follow along County Route (CR) 105, on the west side of the Trinity River from Trinity Dam to Lewiston Lake.

- Routing Alternative 2 was an alternative alignment of Segment 2, the tap line from Lewiston Tap to Lewiston Substation. With this alternative alignment, the tap line would follow a similar path to Segment 2 of the proposed action but would be located further west of Trinity Dam Boulevard.

- Routing Alternative 3 was an alternative alignment of the western terminus of the line (Segment 3), near the proposed Weaverville Switchyard. With this alternative alignment, the line would cross further north than described for the proposed action.

- Routing Alternative 4 was an underwater cable alternative for Segment 1. With this alternative alignment, the line would enter the Trinity River near the Trinity Substation, convert to an underwater cable, extend through Lewiston Lake, and exit the lake west of the fish hatchery.

No Action Alternative

Under the no action alternative, no upgrades or rebuilds to the existing transmission line system would be constructed in the Trinity area. For the PG&E lines currently serving the Trinity PUD load, structures and hardware would be maintained, repaired, and/or replaced as required during routine maintenance activities or in the event of emergency outages of the transmission lines. Repairs and maintenance would increase in frequency as the transmission lines age.

Alternatives Analysis

The system alternatives described above were not considered in detail for this EIS because technical construction and maintenance issues would make the alternatives infeasible. The routing alternatives described above were also not considered in detail because the preferred alternative, constructing the project within the existing ROW, would have less adverse effects than would constructing new lines in previously undisturbed areas.

IMPACTS EVALUATED

This EIS provides a description of the affected environment and an evaluation of the environmental consequences for several resource areas. Environmental resource areas analyzed include:

- Air quality,

- Biological resources,
- Cultural resources,
- Geology and soils,
- Land use,
- Noise,
- Paleontological resources,
- Public health and safety,
- Socioeconomics and environmental justice,
- Traffic and transportation,
- Visual resources,
- Water resources, and
- Wilderness and recreation.

The discussion of the affected environment includes a description of the existing conditions and background for each resource, definition of the resource study area, description of issues of environmental concern, and a characterization of the study area. The environmental consequences discussion provides information on the standards of significance, environmental protection measures (EPMs), a description of impacts, and additional mitigation measures, if appropriate.

Table ES-1 presents a summary of the environmental impacts of the proposed action and the no action alternative, based on the analyses in chapter 3 of this EIS. The table presents impacts that would result from constructing, operating, and maintaining the proposed transmission line segments and the Weaverville Switchyard.

For each of the resource areas described above, impacts were either less than significant impacts or potentially significant impacts that would be mitigated to less than significant. The no action alternative appears to have the fewest overall impacts; however, it does not meet Western's need for power system reliability.

CUMULATIVE IMPACTS

Cumulative impacts result from the incremental effect of the action, decision, or project when added to other past, present, and reasonably foreseeable future actions. Requirements for addressing cumulative impacts are to gather and analyze enough data to make a reasoned decision concerning these impacts. Western examined actions that have environmental impacts on the same resources affected by this project and similar projects.

Cumulative impacts for each of the resource areas were assessed. The proposed action would have a negligible contribution to cumulative impacts after mitigation measures for all resources were implemented.

Table ES-1 Summary of Impacts

Affected Environment	Proposed Project	No Action Alternative
Air Quality	Short-term impacts to air quality would occur during construction and periodic maintenance of the ROW and access roads. The increase of air emissions after applying the applicable EPM would be well below the significance thresholds. The proposed project is not in an area considered likely to contain natural occurrences of asbestos. A permit and approval would be obtained by the USFS prior to any burning. No diesel-fired sources are planned; however, should any of these type of sources be needed, they would be registered under the portable equipment registration program or have a permit issued by the District. No significant impacts to air quality would result from the proposed project.	The ROW would not be increased and new transmission lines would not be constructed under the no action alternative. Air emissions would not be increased. There would be no significant impacts to air quality.
Biological Resources • Vegetation	Construction and operation would result in the permanent loss of about 2.2 acres of vegetation for access roads and the Weaverville Switchyard and would alter up to 157 acres of vegetation within the ROW. An additional 31.5 acres of vegetation would be temporarily impacted during construction. The extent of disturbance to mixed conifer hardwood forest would be a small fraction of the remaining area of similar adjacent communities. The proposed project would have a less than significant impact on vegetation communities. Disturbed sites would be monitored for noxious weeds. Any colonizing noxious weeds would be actively controlled via an approved control methodology. The proposed action would not result in the uncontrolled expansion of noxious weeds and would be a less than significant impact.	Under the no action alternative, the existing 12-kV distribution line would remain in the existing ROW but would not be energized. The line presents an ongoing potential for bird collisions. Other actions and construction activities with associated adverse environmental effects would be required to improve the electric system and provide reliable electric power in the area.

Table ES-1 (Cont.)

Affected Environment	Proposed Project	No Action Alternative
Biological Resources • Terrestrial Wildlife	The minimal losses of wildlife that would result from construction activities or temporary displacement during construction activities would be insignificant in a regional context. Wildlife displacement and mortality is a short-term impact that would not result in a regional decline in any populations of terrestrial wildlife. If blasting does occur, it would be of short duration, and there would be no measurable long-term effect on population numbers or distribution over a species range of occurrence. Wildlife near the helicopter flight path and designated landing areas would be exposed to an increase in noise levels of short duration (e.g., usually less than five minutes). With proposed mitigation measures to reduce bird mortality (e.g., state-of-the art marking devices and spacing between conductors), impacts from the transmission line would not affect the biological viability of local, regional, or national populations of bird species. The proposed project would have a less than significant impact on terrestrial wildlife with the incorporation of EPMs.	
Biological Resources • Fisheries	The proposed project would not directly disturb suitable habitat, individual fish, or populations within the Trinity River, Rush Creek, or Little Browns Creek. Therefore, there would be no significant impacts to fisheries.	
Biological Resources • Federally Listed Species • Designated Critical Habitat	<u>Bald eagle (recently delisted)</u>: No nests have been identified within the project area. Electrocution hazards would be minimized by line spacing, conductor layout, utility pole construction, and use of state-of-the-art marking devices, where necessary. The proposed project would have a less than significant impact on the bald eagle, with the incorporation of environmental protection and conservation measures. <u>Northern spotted owl (threatened)</u>: The project intersects the 1.3-mi home range buffer surrounding three nests that were active in 2007 and 2006, as well as eight other historic nest sites. The project applicant would conserve and manage off-site acreage to mitigate the loss of northern spotted owl habitat, including about 35.4 acres of designated critical habitat. The proposed habitat conservation measures, distance standards for Riparian Reserves, and general project specifications and conservation measures ensure that the proposed action would not contribute to the further decline of the northern spotted owl.	

Table ES-1 (Cont.)

Affected Environment	Proposed Project	No Action Alternative
Biological Resources (Cont.) • Federally Listed Species • Designated Critical Habitat	Coho salmon (threatened): This anadromous fish species has access to the Trinity River, Rush Creek, and Little Browns Creek; each stream contains designated critical habitat. No construction activities would occur within these streams. Construction could result in short-term increases in sedimentation and turbidity in the downstream reaches of the streams and their tributaries traversed by the project. Summer construction to avoid the spawning season, the use of sediment fences, and implementation of the Riparian Reserve limits of disturbance standards would reduce impacts to a less than significant level. The proposed action would not directly impact any coho salmon designated critical habitat. Pacific fisher (candidate): Two incidental sightings of the Pacific fisher were documented during the 2006 northern spotted owl surveys. The proposed action would not act as a barrier to Pacific fisher movement, as the existing transmission line corridor and existing networks of road have not precluded their use of the project area. The proposed habitat conservation measures for Riparian Reserves and the general project specifications and conservation measures ensure that the proposed action would not contribute to the need for the species to become listed or result in a significant impact.	
Biological Resources • USFS and BLM Sensitive Species	Of the species that are listed by the USFS and BLM, the northern goshawk and foothill yellow-legged frog may occur in the project area. Implementation of the proposed action may adversely impact individuals but would not be likely to result in a loss that would cause a trend to Federal listing or a loss of rangewide species viability.	
Biological Resources • Wildlife Management Indicator Assemblage	Five assemblages are present in the project area. Construction of the project would result in the removal of some assemblage types and the shifting of others to another type. On the basis of the forestwide trend patterns detailed in section 3.2, the project-level habitat impacts would not alter or contribute to existing forestwide trends. These shifts, losses, and removals of habitat would be very small in relation to forestwide trends and well within the margin of error in measuring these patterns.	

Table ES-1 (Cont.)

Affected Environment	Proposed Project	No Action Alternative
Biological Resources • Survey and Manage/ Aquatic Conservation Strategy	No populations of the Survey and Manage mollusk or plant species were found during the 2006 field surveys. Therefore, it is not anticipated that any direct, indirect, or cumulative impacts would occur to Survey and Manage species as a result of the potential lack of individuals or populations in the proposed project area. The proposed action is in compliance with the 2001 Survey and Manage Record of Decision.	
Biological Resources • Riparian Reserves	Riparian Reserve areas would be crossed on USFS lands. Since the project would follow the prescribed limits of disturbance within classified Riparian Reserves, construction of the project would have a less than significant impact.	
Biological Resources • Waters of the United States and Wetlands	Waters of the United States, including wetlands, would be spanned by the transmission lines; no tower structures would be placed within any ordinary high water marks. Disturbances within streams from the existing and new access road crossings include the removal of one culvert and the placement of rocks and/or the lowering of the grade of the approaches at some locations. No culverts would be installed, and no soil fill would be placed in stream crossings. Impacts to waters of the United States and wetlands are expected to be less than significant.	
Cultural Resources	Sixteen historic era sites, two electrical power lines, one residential complex, and two isolated features have been identified within the project's area of direct effects. Western has made preliminary determinations of eligibility for the identified resources and will consult with the California Office of Historic Preservation on final determinations of eligibility and effects on historic resources for the project. Although Western will continue to consult and update tribes throughout the proposed action, no traditional cultural properties or other concerns have been raised by the tribes.	Impacts would be restricted to existing transmission line and existing access road maintenance. Repair to the transmission lines or structures could involve localized ground disturbance from heavy equipment. Vegetation removal by hand or mechanical equipment may be necessary to improve access roads or access to individual transmission line structures.

Table ES-1 (Cont.)

Affected Environment	Proposed Project	No Action Alternative
Geology and Soils	Trinity County has a history of low seismic activity. Geotechnical hazards would be evaluated during final design specification for each pole location and road construction area. Selecting sites with stable conditions, correcting unstable slope conditions, and implementing EPMs would reduce hazardous site-specific geologic conditions. The areas where soil erosion may be increased are narrow and spread over a large area, thereby reducing the potential for impacts. Development of an erosion and sedimentation control plan and implementing the EPMs would reduce geology and soil erosion impacts to less than significant levels.	The existing distribution line would remain in place and would be periodically accessed using the existing ROW and access roads. The no action alternative would result in no additional impacts to geology and soil resources over current conditions.
Land Use	Construction of the project would use existing ROW, or where required, new ROW would cross undeveloped land. The project would not remove houses or other buildings and would not displace people or disrupt or divide the physical arrangement of an established community. The project would cross Reclamation lands and lands subject to three land use plans (USFS, BLM, and Trinity County) and the Trinity County's Zoning Ordinance. The proposed action would not conflict with BLM or Trinity County land use policies or Reclamation zones. With the implementation of the EPMs, the potential conflict with USFS land use policies would be reduced to less than significant.	The no action alternative would not result in direct or indirect effects to land use.
Noise	Most of the project traverses undeveloped areas with few if any noise-sensitive areas. Noise-sensitive areas include Ackerman Campground, isolated residential areas near Jessup Gulch Road, the Trinity River Fish Hatchery, and residential areas near the community of Lewiston. Elevated noise levels during construction would be periodic and occur over a relatively short period of time (e.g., a few weeks). Blasting has a low probability of occurring, especially near or adjacent to sensitive receptors. If it does occur, it would be of short duration. Noise associated with the use of helicopter(s) for construction of the transmission line is not anticipated to be significant because of the rural nature of the project area, the short duration the helicopter will spend at each site, and the fact that most of the helicopter operations would be less than 60 dBA near noise sensitive receptors. The transmission line would be designed to minimize conductor point discharge sources, which could be a source of corona activity that would generate audible noise levels. The specifications for electrical equipment would be developed so they would comply with the sound level required by industry standards, governing regulations, or local ordinances.	Under the no action alternative, no facilities would be constructed. Current noise levels would remain unchanged.

Table ES-1 (Cont.)

Affected Environment	Proposed Project	No Action Alternative
Noise (Cont.)	Maintenance-related noise levels would be similar to those for construction, although they would be less frequent and intense. With the implementation of EPMs, noise impacts would be less than significant.	
Paleontological Resources	Most of the rocks found in Trinity County are normally poor sources of fossil materials. The project area has a "low sensitivity" for finding scientifically significant fossils. Therefore, impacts to paleontological resources would likely be insignificant.	No facilities would be constructed. No disturbance or activities would occur above existing conditions. Therefore, there would not be any potential to impact unknown paleontological resources.
Public Health and Safety and Hazardous Materials	The general public health and safety conditions would not change as a result of the proposed action. The proposed action would not alter any emergency response plan or interfere with emergency response vehicles or pose a hazard to public or private airports. Solid and hazardous wastes would be disposed of at facilities permitted for handling and disposing of waste. In accordance with National Electrical Safety Code (NESC) requirements, induced currents from the transmission lines would be 5 mA or less. Therefore, the potential for electric shock would be less than significant. The electric and magnetic fields at the edge of and within the project transmission line ROW would be less than the threshold values. The Weaverville Switchyard and most of the transmission line would be located in uninhabited areas. With implementation of the EPMs, impacts to public health and safety and hazardous materials are determined to be less than significant.	Under the no action alternative, the frequent electrical service outages that have occurred would continue to present potential public health and safety impacts.
Socioeconomics and Environmental Justice	The small number of outside workers (16) would not cause a major or regionally measurable change in employment, community services, or housing availability or measurably increase the population of Trinity County. The proposed action would not displace or cause a major disruption to businesses. There would not be a disproportional affect to minority or low-income populations. The increased reliability of the energy supply to commercial and industrial users might contribute indirectly to economic growth and additional tax revenues in Trinity County but would not, in and of itself, induce growth. The project would not have a significant impact on socioeconomics or environmental justice.	The no action alternative would continue to use the existing transmission lines and would result in no additional direct, indirect, or cumulative effects to the population, housing, income, or community services of the project area. However, the current issues regarding system reliability would remain.

Table ES-1 (Cont.)

Affected Environment	Proposed Project	No Action Alternative
Traffic and Transportation	As a result of the current very low traffic volumes on local roadways and the low number of construction-related trips each day along most of these roadways, construction traffic would not change the existing level of service or result in significant traffic delays along these rural access routes. Construction activities and equipment movement would follow applicable highway safety requirements and Caltrans and Trinity County traffic regulations. Helicopter operations would comply with all applicable Federal Aviation Administration (FAA) regulations and are not anticipated to pose impacts to populated locations or private or public airports. Operation, inspection, and maintenance traffic would occur infrequently and would typically involve one or two vehicles and two to four workers per year. With implementation of applicable traffic regulations, FAA regulations, and EPMs, traffic and transportation impacts would be less than significant.	Under the no action alternative, no facilities would be constructed, and project-related traffic would not be generated. No traffic or transportation impacts would occur above current conditions.
Visual Resources	The project falls into USFS Management Areas R and PR for visual resources, as well as BLM Class III lands. The project would be consistent with the management objectives for these classes. However, changes resulting from the project could alter the visual quality of the area. Some sensitive areas for scenery may not be screened by vegetation because some of the existing vegetation would be removed when the current ROW is widened. The new Weaverville Switchyard would be a new facility but small and partially screened from State Route (SR) 299. A majority of the project is in remote areas where some portions are viewed as being highly sensitive for scenery but where there are few viewers. EPMs would reduce visual impacts to the extent possible. Therefore, the project is anticipated to have less than significant impacts to visual resources.	The no action alternative would result in no additional direct or indirect effects on visual resources. However, effects resulting from the existing wood poles and distribution line would continue to modify the visual quality in the project area. The poles are a consistent intrusion into the landscape and would continue to result in a less than significant impact.
Water Resources	Vegetation removal, grading, excavation, and other soil-disturbing activities would create erosion and sediment discharge into nearby streams. Water needed during construction would be obtained from more than one existing source, impacts would be short term, and water use would be extremely limited. The transmission line would span streams, and no structures or facilities (i.e., poles, or foundations) would be located within waterways. Disturbances within streams from the existing and new access road crossings include the removal of one culvert and the placement of rocks and/or the lowering of the grade of the	The existing distribution line would remain in place. Existing access roads would continue to be used. The no action alternative would result in no additional impacts to water resources in the project area over current conditions.

Table ES-1 (Cont.)

Affected Environment	Proposed Project	No Action Alternative
Water Resources (Cont.)	approaches at some locations. The majority of the new poles would be located outside the floodplains. Where installation of new poles within floodplains is determined to be unavoidable, proposed structures would be designed to withstand flood events. An erosion and sedimentation control plan and a stormwater pollution prevention plan would be developed to reduce sedimentation impacts. Implementation of these plans and the EPMs would reduce water resource impacts to less than significant.	
Wilderness and Recreation	Although there are no developed recreational activities or facilities along the project ROW, dispersed recreation might occur on a sporadic basis through unspecified recreational areas along the ROW, such as the nature trails and roadways. These areas could be temporarily affected during expansion of the existing ROW and construction of the new ROW. Ground construction of Segment 1 would not affect water-based activities along the Trinity River and Lewiston Lake, because of the setback of the existing ROW from these activities. All helicopter flights for the project would be coordinated with the USFS in advance, to minimize disturbance to recreation users. Increased OHV use resulting from the project is anticipated to be less than significant. If requested by the land management agency, spur roads would be blocked to deter unauthorized use. The project would not result in the loss of any dedicated recreational activities or facilities. Impacts to wilderness and recreation would be less than significant.	The existing distribution line would remain in place, and existing access roads would continue to be used. The no action alternative would result in no additional impacts to established wilderness and recreation resources in the project area over current conditions.

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1.0 INTRODUCTION AND PURPOSE AND NEED

1.1 BACKGROUND

Western Area Power Administration (Western) delivers reliable, cost-based hydroelectric power and related services within the central and western United States. Western is one of four power marketing administrations within the U.S. Department of Energy (DOE) whose role is to market and transmit electricity from Federal multiuse water projects. Western markets and delivers electricity from power plants operated by the Bureau of Reclamation (Reclamation), U.S. Army Corps of Engineers (USACE), and the International Boundary and Water Commission (IBWC).

Western's service area covers 1.3 million mi^2, and its wholesale power customers provide service to millions of consumers in 15 Western states. Western operates and maintains more than 17,000 mi of transmission lines from its four regional offices in Billings, Montana; Phoenix, Arizona; Loveland, Colorado; and Folsom, California. Western markets power from these regions and its Colorado River Storage Project Management Center in Salt Lake City, Utah. The Trinity County area is within Western's Sierra Nevada Region (SNR). The SNR maintains and operates numerous substations and more than 1,400 mi of transmission lines.

By law, Western first markets power that is in excess of the Federal project requirements to preference customers, such as Federal and State agencies, Native American Tribes, electric cooperatives, municipal utilities, public utility districts, irrigation districts, and water districts. Western sells wholesale electricity to more than 70 customers in central and northern California and Nevada from the Central Valley Project (CVP) and the Washoe Project.

1.2 PROPOSED ACTION OVERVIEW

Western is preparing this environmental impact statement (EIS) to construct, operate, and maintain proposed power transmission facilities in Trinity County, California. Portions of the proposed transmission line would cross lands managed by the U.S. Forest Service (USFS), Bureau of Land Management (BLM), and Reclamation. The USFS, BLM, and Reclamation are participating in the preparation of this EIS, which addresses the proposed removal of about 5.3 mi of existing 12-kilovolt (kV) distribution line and the construction and operation of about 16 mi of new 60-kV transmission line, a tap structure and associated equipment, and a new switchyard. The decisions to be made by Western, USFS, BLM, and Reclamation regarding the proposed action, also referred to as the project, will be issued following the Final EIS in the form of a separate Record of Decision (ROD) for each agency.

Western is preparing this EIS in compliance with Federal laws, regulations, and guidelines, principally the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of NEPA (title 40, parts 1500–1508 of the *Code of Federal Regulations* [40 CFR parts 1500–1508]), the DOE NEPA implementing procedures (10 CFR part 1021), and other applicable regulations.

The role of this EIS is to inform decision makers and the public of the proposed action, associated environmental impacts, and reasonable alternatives. The EIS will be used by Federal officials in conjunction with other relevant material to plan actions and make decisions concerning the proposed action. Western is the lead Federal agency, as defined by 40 CFR 1501.5; USFS, BLM, and Reclamation are cooperating agencies. The EIS is intended to satisfy the requirements of NEPA for each Federal agency's decision related to the siting, construction, operation, and maintenance of the proposed action. A separate Construction, Operation, and Maintenance (COM) Plan for the project would be developed that would include detailed requirements that would ensure that environmental impacts do not exceed those analyzed in this EIS.

1.3 PURPOSE AND NEED FOR THE PROPOSED ACTION

The purpose and need for the actions of each Federal agency regarding the proposed action are described below.

1.3.1 Western Area Power Administration's Purpose and Need

The Trinity Public Utilities District (PUD) is a small utility district in northern California encompassing approximately 2,200 mi^2 and serving approximately 16,000 consumers, with only one customer with an electrical demand greater than 200 kW. The Trinity PUD is directly connected to the California independent system operator (ISO)-controlled electrical grid by 60-kV transmission facilities owned and operated by Pacific Gas and Electric Company (PG&E). Although transmitted through the PG&E system, the Trinity PUD receives 100% of its power from Western.

Consumers in the Trinity PUD service area routinely experience nearly 20,000 consumer hours per year in outages, according to the Trinity PUD. In the winter, many of the outages last 3 to 4 days before power can be restored. Restoring service is difficult because of the remote location and rough terrain.

Western's purpose and need for the proposed action is to improve power system reliability in the area by providing a direct interconnection with Western's transmission system at Trinity Power Plant, to deliver energy to the Trinity PUD as authorized by the Trinity River Division (TRD) Act. The TRD was authorized by an act of Congress on August 12, 1955. The TRD Act provided for the construction, operation, and maintenance of the TRD facilities of the CVP, composed of the Trinity Dam, Lewiston Dam, and Clear Creek Tunnel (which transports water from Lewiston Dam into Whiskeytown Lake).

Western proposes to construct and operate proposed power transmission facilities in Trinity County. This proposed action includes the removal of about 5.3 mi of existing 12-kV distribution line and the construction and operation of about 16 mi of new 60-kV transmission line, a tap structure and associated equipment, and a new switchyard. The Trinity PUD would assist in restoring the line during emergency outages.

1.3.2 U.S. Forest Service's Purpose and Need

The USFS purpose and need for the proposed action is to respond to Western's request to cross National Forest System (NFS) lands with portions of the proposed transmission line. The USFS Federal action would include a temporary authorization to permit construction and use of temporary roads and staging areas required for project construction. A timber sale contract with Western would authorize the removal of vegetation from the right-of-way (ROW), roads, and temporary access areas. A long-term special use permit (SUP) would be issued to Western under the authority of the Federal Land Policy Management Act (FLMPA) to authorize the operation and maintenance of the ROW corridor for a 60-kV transmission line and access roads on NFS lands. The permit, including a detailed construction, operation, and maintenance (COM) plan, would incorporate implementation of specified mitigation measures as described in the EIS ROD.

The USFS action would be consistent with and support the applicable goals, standards, and guidelines of the 1995 Shasta-Trinity National Forest (STNF) Land and Resource Management Plan (LRMP) (USFS 1995) and the 2004–2008 USFS Strategic Plan (USFS 2004b), including:

- Strategic Goal 4: Help meet energy resource needs and

- Objective 4.1: Work with other agencies to identify and designate corridors for energy facilities, improve permit application processing efficiency, and establish appropriate land tenure (including transferability clauses) in easements and other authorizations to provide for long-term project viability.

1.3.3 Bureau of Land Management's Purpose and Need

The BLM purpose and need for the proposed action is to respond to Western's request to cross BLM-managed public land with portions of the proposed transmission line and access roads. BLM's action would be to issue a ROW to Western to authorize the construction and maintenance of a transmission line and ancillary facilities. The proposed transmission line conforms with BLM strategic goals by serving the current and future public through the improved system reliability to customers of the Trinity PUD. A timber sale contract may also be completed to allow for the removal of merchantable timber within the ROW.

1.3.4 Bureau of Reclamation's Purpose and Need

The Reclamation purpose and need for the proposed action is to respond to Western's request to cross Reclamation-managed public lands with portions of the proposed transmission line and associated access roads. Reclamation proposes to grant Western permission to temporarily cross its lands located near the Trinity and Lewiston Dams for construction of the transmission line and access roads and to grant long-term permission for operation and maintenance of the transmission line. Access across Reclamation lands would be needed to make use of the existing transmission line and access road ROW to the extent practical.

1.4 CONSULTATION AND COORDINATION

1.4.1 Public Involvement

Public involvement is a vital part of the decision-making process for an EIS. Western developed a public involvement program that provides multiple opportunities for public comment during the EIS process. Opportunities for the public to obtain information about and comment on the proposed action occur throughout the entire EIS process and include newsletters, newspaper ads, public scoping meetings, public comment hearings, review of the Draft EIS, and a public comment period of at least 45 days. Public comments are evaluated by Western and applied to alternative formulation, alternative evaluation, impact assessment, and the decision-making process.

The public involvement program is intended to guide Western through a collaborative, systematic, decision-making process with four primary purposes:

1. Share information with the interested public,
2. Gather information from the public,
3. Identify public concerns and issues, and
4. Develop and maintain credibility.

Western designed the public participation process to (1) heighten public awareness and encourage open communication throughout the development of the EIS; (2) be flexible and responsive to the issues and needs of the public, Western's customers, and public agencies; (3) solicit input on the scope of issues that should be addressed in the Draft EIS; and (4) identify significant issues related to the proposed action.

Public scoping meetings were held in Weaverville and Redding, California, in July 2006. The Draft EIS was circulated to Federal, State, regional, and local agencies and to interested individuals and organizations that may have wished to review and comment on it. Publication of this Draft EIS marked the beginning of a 45-day public review period that ended March 26, 2007, during which Western received written comments

Western held public hearings during the Draft EIS review period on March 6, 2007, at the Best Western Victorian Inn in Weaverville, California, and on March 7, 2007, at the LaQuinta Inn in Redding California. The hearings were part of the Western's continuing efforts to provide opportunities for public participation in the decision-making process and to meet the objectives of such participation, as listed above.

Western received 15 written comment letters that represented 13 different individuals and public and private organizations. Two individuals also provided comments orally at the public hearing in Weaverville. No members of the public attended the hearing in Redding. Appendix G of this EIS contains an index of the persons and organizations that submitted written comments as well as an index listing the persons who provided oral comments at the public hearing. It also contains the comment letters reproduced in their entirety, with individual comments identified by numbered sidebars. Western's responses to the comments are provided on the right-hand facing pages. A transcript of the public hearing is also provided in appendix G, with individual comments treated in a similar fashion.

A number of issues pertaining to the analyses in Draft EIS were raised in public comments. Among these issues were:

- Concerns regarding erosion control to prevent the sedimentation of streams as a result of construction traffic going over stream crossings,
- Specific permitting and mitigation measures addressing such erosion,
- Estimation of the extent of direct and cumulative impacts from the proposed project, and
- Analysis of impacts to the northern spotted owl (*Strix occidentalis caurina*).

Several modifications were made to the Draft EIS to address these issues; these are described in the respective responses to the comments.

In addition to the public comment process described above, revisions were made in consultation with technical staff from USFS, BLM, and Reclamation the cooperating agencies in preparing the EIS. Additional analyses and clarifications were made in the assessments of soil erosion, geology, watershed impacts, and herbicide risks. Additional revisions were made after technical and editorial review. Neither these revisions, nor those resulting from agency consultation, affected the conclusions of the Draft EIS; they were made to address the technical quality of the document. Content-related changes to the Draft EIS text are identified with a vertical line in the margin of the page. The agency consultation and technical review process and resultant modifications are described in appendix F.

Following the receipt of comments and the close of the public comment period, Western prepared this Final EIS, which considers and responds to comments on the Draft EIS.

1.4.2 NEPA Scoping

A Notice of Intent (NOI) describing the proposed action was published in volume 71, page 35266 of the *Federal Register* (FR) on June 19, 2006 (71 FR 35266). The NOI announced the intent to prepare an EIS on the proposed project, described the proposal, gave scoping meeting places and dates, started a 30-day scoping comment period, and provided contacts for further information about the proposed project and for submitting scoping comments. In addition to the NOI published in the FR, a local NOI newsletter was sent to everyone on the project mailing list, which included agencies, groups, and local landowners. Ads were also published in local newspapers to announce the upcoming public scoping period and meetings and provide contacts for comments.

The FR notice, the local NOI, and the newspaper ads announced a 30-day comment period for scoping the EIS. Scoping the EIS refers to establishing the range of alternatives, resources of most concern, and issues that the public, interested groups, and agencies wish to see addressed in the EIS. During the 30-day comment period, Western held two public scoping meetings: on July 10, 2006, from 3 to 7 p.m. at the Best Western Victorian Inn, Weaverville, California, and July 11, 2006, from 3 to 7 p.m. at the Oxford Suites, Redding, California. A copy of the NOI is attached in appendix A. Two comments were received from one commenter during the scoping period, and these are attached in appendix B. The commenter expressed concern that the switchyard could utilize land that could be used for housing and wanted to know if PG&E would be involved in the proposed project.

The project was also listed in the USFS Schedule of Proposed Actions (SOPA) beginning in April 2005. The SOPA is available online at http://www.fs.fed.us/sopa/. To date, no inquiries have been received by the USFS project contact regarding the proposed action. A Notice of Availability (NOA) of the Final EIS will be mailed to the EIS mailing list as well.

1.4.3 Agency Coordination

Western coordinated with representatives of Federal, State, and local agencies throughout the process of collecting information for this EIS. Chapter 5.0, Consultation and Coordination, contains a list of Federal, State, and local agencies that were contacted during preparation of the EIS. Agencies were contacted for background information, consultation, and general input.

1.5 PERMITS, APPROVALS, AND REGULATORY REQUIREMENTS

Numerous Federal and State regulations and permit requirements would be applicable to construction and/or operation of the proposed action. Western or its contractors would be required to comply with all applicable requirements, as well as obtain and comply with terms contained within required permits. **Table 1-1** lists the major Federal and State agencies and associated applicable permits, approvals, and consultations identified for the construction and operation of the proposed action.

Table 1-1 Potential Permits and Approvals Applicable to the Project

Agency/Department	Permit/Approval	Action Associated with or Required for
FEDERAL AGENCIES		
U.S. Fish and Wildlife Service (USFWS)	Biological Assessment, Section 7 "Consultation, Biological Opinion," Endangered Species Act (volume 16 of the *United States Code* [16 U.S.C. §§ 1531–1544])	• Activity where there may be an effect on Federally listed endangered/threatened/ proposed species.
	Fish and Wildlife Coordination Act	• Provide comments to prevent loss of and damage to wildlife resources.
National Marine Fisheries Service (NMFS)	Biological Assessment, Section 7, "Consultation, Biological Opinion," Endangered Species Act (16 U.S.C. §§ 1531–1544)	• Activity where there may be an effect on Federally listed endangered/threatened/ proposed species.
Bureau of Land Management (BLM)	Pesticide Use Permit, ROW, Federal Land Policy and Management Act (FLPMA, 43 U.S.C. § 2800 et seq.)	• Use of herbicides on BLM land • ROWs on BLM-managed lands.
Bureau of Reclamation	Temporary access	• Activities on Reclamation-managed lands.
U.S. Forest Service (USFS)	30-Year-Term Special Use Permit (FLPMA, 43 U.S.C. § 1702 et seq.) Construction, Operation, and Maintenance (COM) Plan Temporary Special Use Permit Timber Sale Contract	• COM Plan would be incorporated into the Special Use Permits (SUPs) to specify the specific actions associated with the operation and maintenance of the transmission line. • Temporary construction permit for the ROW would authorize construction of a utility ROW and use of National Forest System (NFS) land for construction staging areas. • A USFS timber sale contract would be issued for ROW clearing.
U.S. Army Corps of Engineers (USACE)	Individual/Nationwide Section 404 Permit, Clean Water Act (CWA, 33 U.S.C. § 1341)	• Discharge of dredge/fill into waters of the United States, including wetlands.
	Section 10, Rivers and Harbors Act Permit	• Activities, including the placement of structures, affecting navigable waters.
Advisory Council on Historic Preservation (ACHP)	Section 106, "Consultation," National Historic Preservation Act (NHPA, 16 U.S.C. § 470)	• Opportunity to comment if project may have an adverse effect on cultural resources listed or eligible for listing on the *National Register of Historic Places* (NRHP).
Federal Aviation Administration (FAA)	Determination of No Hazard (49 U.S.C. § 44718)	• Agencies proposing to erect or alter an object that may affect the navigable airspace.
U.S. Department of Justice, Bureau of Alcohol, Tobacco, Firearms, and Explosives	Explosive User's Permit	• Consider issuance of permit to purchase, store, and use explosives for site preparation during tower footing excavation.

Table 1-1 (Cont.)

Agency/Department	Permit/Approval	Action Associated with or Required for
STATE AGENCIES		
State Water Resources Control Board, Regional Water Quality Control Board	General Construction Activity Stormwater Permit	• Stormwater discharges associated with construction activity.
	401 Certification, CWA (33 U.S.C. § 1341), if the project requires a USACE Section 404 Permit	• Discharge into waters and wetlands (see USACE Section 404 Permit).
California State Office of Historic Preservation/State Historic Preservation Officer (SHPO)	Section 106, "Consultation," NHPA (16 U.S.C. § 470)	• Opportunity to comment on effects of undertaking (project) on significant cultural resources as required by the NHPA.

2.0 PROPOSED ACTION AND ALTERNATIVES

This chapter describes the proposed action (also referred to as the project), alternatives to the proposed action, and the no action alternative. It presents descriptions of the project activities associated with the proposed action and identifies the mitigation measures anticipated to be implemented as part of the proposed action. The chapter also includes a discussion of alternatives initially evaluated but later eliminated from detailed study.

2.1 OVERVIEW OF THE PROPOSED ACTION

Western proposes to construct the Trinity PUD Direct Interconnection Project (the project), which would be located in Trinity County, California, in portions of Townships 33 and 34 north, and Ranges 8 and 9 west, Mt. Diablo meridian (**figures 2-1 and 2-2**). The objective of the project is to enhance the reliability of service for the customers of Trinity PUD by establishing a new direct interconnection with Western's CVP transmission system. Presently, Trinity PUD receives its allocation of Federal power from Western across PG&E's power system. The Trinity River Division Act of August 12, 1955, states that the Secretary of the Interior "is authorized to construct, operate, and maintain, as an addition to and an integral part of the Central Valley Project, California, The Trinity River Division...such electrical transmission facilities as may be required to deliver the output of said power plants...and to furnish energy in Trinity County" [69 Stat. 719 (1955)]. The project would provide a direct interconnection with the CVP transmission system and deliver energy to Trinity County as authorized by the Trinity River Division Act.

The major component of the project would be an approximately 16-mi-long, 60-kV overhead transmission line called the Trinity County Direct Interconnection (**figure 2-2**). The project would connect to Western's Trinity Substation at Trinity Power Plant. This substation, the northern terminus of the project, and Reclamation's Trinity Power Plant are located at Trinity Dam on the Trinity River, approximately 10 mi northeast of Weaverville, in eastern Trinity County. The project would cross the Trinity River below Trinity Dam, replacing the existing 12-kV crossing, and would cross again near the Lewiston Dam below the Trinity River Fish Hatchery. A 1-mi-long tap line would be constructed from a three-way switch structure on the main line to distribute power to Trinity PUD's Lewiston Substation north of Lewiston. The line would then continue west to a new Weaverville Switchyard. Weaverville Switchyard, which would be located at the southern terminus of the transmission line, would be constructed as part of this project and would be located approximately 2 mi south of the center of Weaverville and east of State Route (SR) 299. Western would maximize the use of existing access roads but would need to construct a total of approximately 4.4 mi of new roads, which would consist of a number of new, short spur roads extending from existing access roads to individual structure locations.

The proposed transmission line has been divided into four main components: three transmission line segments and one switchyard. In Segment 1, "Existing Corridor," Western would remove the existing conductor and poles for 5.3 mi of the Trinity-Lewiston 12-kV distribution line (Trinity PUD line). Then the existing cleared ROW for the Trinity PUD line would be expanded from about 20 to 80 ft to accommodate installation of a new 60-kV transmission line. Segment 1 would follow the existing ROW from Trinity Dam down river approximately 6.5 mi toward

Lewiston. Segment 1 would cross the Trinity River at two locations: below the Trinity Dam and below the Lewiston Dam near the Trinity River Fish Hatchery. Segment 1 runs through the steep and rugged terrain of the STNF, crossing ridge tops and drainages. The land in Segment 1 is a mix of Federal and private lands, including National Forest System (NFS) lands administered by the USFS and Reclamation, public lands administered by the BLM, and private lands owned by Sierra Pacific Industries (SPI) and other parties. Portions of the NFS lands are within the boundaries of the Shasta-Trinity National Recreation Area.

Construction and maintenance of Segment 1 would generally use existing access roads for the 12-kV line. However, a total of approximately 0.5 mi of new access road would be required, composed of several short spurs.

For Segment 2, “Lewiston Tap,” Western would acquire an 80-ft ROW to build a new 60-kV transmission line, approximately 1 mi in length, south to the existing Trinity PUD Lewiston Substation. A steel pole with a three-way switch would be installed near Mile 6.5 to accommodate the incoming line from Trinity Substation, the proposed tap line down to the Lewiston Substation, and a new line segment to the proposed Weaverville Switchyard. Segment 2 would parallel an existing Trinity PUD distribution line along Trinity Dam Boulevard and Rush Creek Road and along the Trinity River between the two points. Segment 2 crosses a mix of NFS, SPI, BLM, and privately owned land. Existing access roads associated with the distribution line would be used, with newly constructed short spurs up to the new line from the existing access roads. Trinity Dam Boulevard and Rush Creek Road follow the Trinity River on the west side in this location, and the existing Trinity PUD distribution line is west of the road. The proposed tap line would be located further to the west, west of the Trinity PUD line. The Trinity PUD line would thus be between the proposed line and these roads.

For Segment 3, “New Corridor,” Western would acquire an 80-ft wide ROW to build a new 60-kV transmission line from the tap structure near Mile 6.5 (near Lewiston) to a new switchyard to be constructed at Weaverville. Segment 3 would be approximately 8.5 mi long. Approximately 1 mi of Segment 3 would parallel the existing PG&E Cottonwood-Humboldt 115-kV line. The Segment 3 corridor would also run through steep and rugged terrain and would closely follow an existing main logging road. The land in Segment 3 is owned primarily by SPI and managed for timber production. The remaining land is managed by the BLM and USFS and about 0.25 mi is privately owned by parties other than SPI. The proposed action would require new ROW and use existing and upgraded existing access roads and new, short spur roads (**figure 2-1**).

As part of the proposed action, Western would also construct a small switchyard south of the town of Weaverville. The new switchyard would allow the project to connect with the existing PG&E radial 60-kV line known as Trinity-Douglas City Transmission Line. The existing PG&E line would be acquired by Trinity PUD. Permission to occupy the proposed Weaverville Switchyard would be initially obtained through a ROW grant from the BLM. Eventually, Western would request conveyance of the site through sale, pursuant to section 203 of the Federal Land Policy and Management Act (FLPMA; 43 USC § 1713), as applicable. Access to the proposed Weaverville Switchyard would be off SR 299, using an abandoned section of that highway.

A more detailed discussion of these project components follows.

2.2 PROJECT COMPONENTS

2.2.1 Transmission Line Components

The major component of the project would be an approximately 16-mi-long, 60-kV overhead transmission line to be called the Trinity PUD Direct Interconnection. The project would connect to Western's Trinity Substation at Trinity Power Plant. Trinity Substation is located near Trinity Dam, on Power House Road. The project would connect three conductors and a fiber-optic communications cable to equipment already installed in the substation.

2.2.1.1 Conductors and Insulators

The Trinity PUD Direct Interconnection would consist of a single-circuit, single-phase, 60-kV transmission line with aluminum conductor steel-reinforced (ACSR) conductors arranged in a horizontal or triangular configuration. A combination fiber-optic cable and ground wire would be strung overhead to provide communications capability and lightning protection. Composite horizontal line post insulators would be used.

2.2.1.2 Poles

The 60-kV new line would be constructed on wood poles ranging from 50 to 105 ft tall (**figure 2-3**). In many areas, the poles would be shorter than the surrounding trees. Each wood pole would require an augered hole with native backfill, resulting in average of 8 to 10 ft of pole in the ground. The holes would be dug by hand in locations where an auger truck could not be brought in.

The span between poles would average 350 ft, ranging from a minimum of 100 ft to a maximum of 500 ft, with some longer or shorter spans depending on topography and other factors (**figure 2-4**). There would be an average of 16 pole locations per mile, with an approximate total of 261 pole locations for the entire project. Pole locations would consist of either single wood poles or three-pole turning structures. Segment 1 would require approximately 102 new poles; Segment 2 would require approximately 17 new poles; and Segment 3 would require approximately 142 new poles. Pole heights, locations, and span lengths vary and would be determined by the following factors: natural terrain and topography; structural limitations; costs; visual considerations; existing and proposed land uses; crossings with manmade features such as roads, canals, and telephone lines; and other criteria that may be unique to the project.

Of the approximately 261 structures, about 11 would be three-pole turning structures. The turning structures and approximately 95 additional single poles would be guyed with wire cable to anchors in the ground. The anchors would consist of steel screw anchors in soil, an 8-ft anchor rod with plate in fractured rock, or a grouted rod in solid rock. Anchors would be buried approximately 6 ft in the ground. Anchor holes would be augered where vehicle access is possible, drilled with hand power augers, or hand-dug otherwise. Conductors exert various stresses on poles; they can change the angle or direction of the line, change expansion and contraction, change the weight of the conductors (greatly increased by ice loading), and cause upward forces on poles in low areas. Guys would be required to support the poles at stressed locations where the angle of the line would change, at dead-end structures, and on some poles to keep them from being pulled out of the ground. Single poles could have up to 4 guys, and three-pole turning structures up to 12 guys. Some anchors would fall outside the normal 80-ft ROW; in those locations, additional clearing would be required, and additional ROW needs would have to be determined and obtained. Typically a 10-ft-wide path to the anchor would be needed, with 5 ft beyond the anchor added as well. These areas, called "guy pockets," would be a very small addition to the land required for the 80-ft ROW. As a rule of thumb, the guy anchors would be about the same distance from the base of the pole as the height of that pole; thus, a 75-ft guyed pole would typically have the anchors 75 ft from the base of the pole. In certain locations in steep terrain, distances could be somewhat longer or shorter. Many of the anchors would fall within the 80-ft ROW, depending on the angles needed for the guys to properly support the pole.

In addition to the wood poles, up to 10 self-supporting weathering steel structures, directly embedded or with rectangular concrete foundations, may be required for large spans or for increased stability. A steel structure with a three-way switch would be installed near Mile 6.5, west of the Trinity River Fish Hatchery. The switch and associated operating shafts and mechanism housing would be installed on the tap structure. The tap structure would be constructed of weathering steel, which is self-rusting to a flat, dark brown surface, resulting in a less visible structure.

2.2.2 Trinity Substation

The proposed transmission line would originate at Western's Trinity Substation, located near Trinity Dam. The proposed line would connect to equipment in the substation. The fiber-optic cable for the remotely operated switches would also connect to communications equipment inside the substation.

2.2.3 Lewiston Substation

Lewiston Substation is a small, existing Trinity PUD distribution substation. The substation is located on Rush Creek Road, near the City of Lewiston, and is unmanned. The project would primarily require electrical equipment modifications within the currently fenced area, such as additional switches, and the termination of the fiber-optic cable to the remotely operated switches.

2.2.4 Weaverville Switchyard

Installation of a new small switchyard would be required for the project to connect with PG&E's existing 60-kV Trinity-Douglas City Transmission Line. The new switchyard would be located on BLM property about 2 mi south of the center of Weaverville on the east side of SR 299. Access to the proposed switchyard would be off SR 299, using an abandoned section of that highway. The proposed new Weaverville Switchyard would have a footprint of approximately 90 by 110 ft.

2.3 PRECONSTRUCTION ACTIVITIES

2.3.1 Preconstruction Survey Activities

Land surveys would locate the transmission line centerline and property lines and corners, provide accurate ground profiles along the centerline, locate structures, and determine the exact locations and rough ground profiles for new access roads. Centerline survey work, consisting of survey control, corridor centerline location, profile surveys, and structure staking, would occur before construction. This information would help complete legal descriptions of proposed properties. Soils would be tested to determine physical properties, including the ability to support the proposed structures. Western would consult with affected landowners during the initial route selection and structure siting process to reduce or eliminate impacts to land uses and avoid or minimize disturbance to sensitive environmental areas. Prior to conducting preconstruction surveys, rights of entry would be obtained for the properties containing the proposed transmission line.

2.3.2 Right-of-Way Acquisition

The project would require the expansion of the existing 12-kV distribution line ROW to a width of 80 ft and the acquisition of a new 80-ft-wide ROW for the rest of the project. For the acquisition of ROW on private land, Western would acquire land rights in accordance with the applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Public Law [P.L.] 91-646), as amended. Western would negotiate with the landowners to purchase easements at fair market value, determined by independent appraisals. Landowners would retain title to the land and could continue to use the property in ways that are compatible with the transmission line. If necessary, Western may acquire the ROW by using its eminent domain authority; however, Western prefers to acquire the ROW through good faith negotiations with the landowner. To acquire any ROW that crosses Federal land, Western would obtain permits or easements according to each agency's process.

2.3.3 Right-of-Way Clearing

ROW clearing for the transmission line and new roads would require removing trees. ROW clearing is done for the following reasons: to construct access roads and construction yards, to assemble and erect structures, to prepare for efficient installation of conductors, to provide for adequate and required electrical clearance for energized lines, to ensure system reliability, and to provide safe working conditions for these tasks. Conductor clearance is extremely important to prevent power outages, which may impact the power system in a very large region, and to prevent the line from being an ignition source for wildfires. To the extent possible, understory plants, shrubs, and low-growing brush or tree species would be left in place to reduce erosion potential and visual impacts and to preserve habitat. When ravines, especially those with riparian areas, are being crossed, relatively more vegetation would be left intact where conductors would be further from the ground. These ROW clearing procedures would promote a stable, low-growing plant community on the ROW, such as grasses and shrubs. This type of plant community would be compatible with transmission line facilities, serving as an environmentally acceptable and useful ground cover, and naturally retarding the regrowth of tall-growing vegetation. The frequency of future ROW maintenance operations and potential interruption of service would also be reduced. During operation of the line, Western's Buffered Vegetation Management approach would be employed in appropriate areas to maintain 18 ft of clearance between vegetation and any point of the circuit conductors or transmission system and 30 ft of clearance around each utility pole (Western 2007c).

2.3.4 Timber Sales

Western would enter into a timber contract with the landowner or land management agency for commercial timber produced from ROW clearing activities. Slash would be removed from the project site, chipped for soil stabilization, or lopped and scattered in accordance with landowner or manager requirements. The use of a chipper may be precluded in much of the project area because of the rugged terrain and poor vehicle access.

Before any timber contract or timber sales activities were started, a timber cruise of the project area would be conducted. Timber cruising is the process of measuring forest stands to determine stand characteristics, such as average tree sizes, volume, and quality. The primary purpose of timber cruising is to obtain a volume estimation to appraise and prepare timber sales.

2.3.5 Stream Crossings

The project would require crossing streams classified as perennial, intermittent, and ephemeral with the transmission line and/or access roads. The term "streams" is used in this EIS to refer to all three classifications, except where a specific stream type is identified. The definition of each stream type is paraphrased from the USACE definitions provided in its 2007 nationwide permits. A perennial stream has flowing water year-round during a typical year. An intermittent stream has flowing water during certain times of the year and may not have flowing water during dry periods. An ephemeral stream has flowing water only during and for a short duration after precipitation events. Groundwater is the primary source of water for perennial and intermittent streams, with runoff from precipitation events a supplemental source. Stream flow for ephemeral streams comes solely from precipitation runoff. More than half of the streams in the project area are ephemeral.

Segment 1 of the project would cross the Trinity River below Trinity Dam, and again near Lewiston Dam below the Fish Hatchery. These crossings would consist of conductors spanning the river to structures set well back from the banks on either side. Segment 3 of the project would cross Rush Creek and Little Browns Creek. The Trinity River, Rush Creek, and Little Browns Creek are all perennial streams.

Existing roads would be used to cross all of the streams. Several streams have existing culverts, but the majority are low-water crossings (drive-through). Most of the streams have very low flow volumes and run over a rocky substrate. Where required, work in streams would involve placing clean rock in streams, removing and/or replacing culverts, or gravelling a road across dry streams. If a culvert was removed and not replaced, the crossing would be converted to a low-water crossing. Local rock not within a cultural resource site would be used where possible.

After the construction period, the crossings would probably be used once per year for routine inspection and maintenance, which would likely be in the winter via snow cat.

Stream crossings below Lewiston Dam have the potential to impact anadromous fish habitat. Western consulted with the National Marine Fisheries Service (NMFS) about the project. If unanticipated activities would be required for stream crossings, NMFS would again be consulted regarding potential impacts to fish habitat. Mitigation measures for stream crossings would also be implemented as described in Chapter 3, Affected Environment and Environmental Consequences.

2.4 PROJECT CONSTRUCTION

This section describes the specific activities that would occur during project construction for each segment or phase. This information was used in the analysis of construction impacts in Chapter 3, Affected Environment and Environmental Consequences.

2.4.1 Construction of Segments 1, 2, and 3

Construction of each segment of the proposed transmission line would involve several phases of work: surveying, establishing clearing requirements, establishing access requirements, construction of staging areas, removal of the existing line, pole delivery and installation, conductor installation, and cleanup and restoration of construction areas. Each of these phases is described in more detail below.

2.4.1.1 Surveying

Land surveying for the construction of a transmission line covers the property; ROW; a ground profile; the access road; establishment of clearing boundaries; and construction surveys. A typical survey crew includes three people. Two crews would likely be needed to complete necessary surveying for the project in 3 to 6 months, all of which would be completed before ground-disturbing activities commenced. Pole locations from plan/profile maps would be located in the field prior to placing holes for the poles.

Much of Segment 2 has already been surveyed and would use existing access roads for the distribution line along Trinity Dam Boulevard. Short spur roads would be constructed where needed.

Surveying of construction areas for Segment 1 and Segment 3 would occur as described above.

2.4.1.2 Clearing Requirements

In Segment 1, the existing 5.3-mi-long ROW would be used but expanded from 20 to 80 ft wide. The existing ROW clearing for Segment 1 would, therefore, include an additional 30-ft swath on each side of the existing 20-ft ROW except in areas near cliffs or roads, where the total 80-ft clearing might be on one side. The remaining 1.2 mi of Segment 1 would be new ROW. For three-pole turning structures and guyed poles, small additional areas outside the 80-ft ROW would be required for guy pockets. In addition, cleared areas of 200 by 50 ft would be required at all three-pole structure locations and some additional locations for pulling and tensioning conductors. These areas would be aligned with the transmission line in both directions so that the pulling would not be at an angle to the segment of transmission line. Locations would be largely those previously cleared and used for constructing the 12-kV distribution line. Trinity PUD would abandon its existing ROW so that Western could obtain the new, wider ROW incorporating the old ROW.

Clearing activities for Segments 2 and 3 would occur in a manner similar to that described above for Segment 1.

The amount of land that would be disturbed for the ROW, as well as the total project disturbance area, is shown in **table 2-1**. Guy wire pockets were intentionally overestimated (e.g., many of the anchors would be within the ROW). While brush and small trees could be cleared around the anchor point, no trees are intended to be cut to place anchors. “Permanent disturbance” listed in the table includes the entire ROW because periodic vegetation management would be required. However, land along the ROW would not be completely cleared and the land would not be lost to productivity. The ROW would still be vegetated as described below and would be able to support wildlife, particularly in the mature timber areas on USFS land.

The clearing of the ROW and any new access roads would be accomplished under a clearing specification. All trees would be cut off at ground level (no more than 12 in. in height), and the stumps left in place for erosion control. Low-growing trees, shrubs, and ground vegetation would be left in place to the extent possible. At ravine crossing locations, where riparian vegetation might be found, more woody vegetation would be retained because of higher conductor clearances. At each structure location, the radius for completely cleared vegetation would be approximately 5 ft in diameter. Any shrubs and ground cover plants outside of this diameter would be left in place to the extent possible. A further description of vegetation is provided in Section 3.2, Biological Resources. Commercial timber generated from the ROW clearing would be purchased from the landowner or land management agency. Slash would be removed from the project site, chipped and spread, or lopped and scattered according to approved USFS or BLM practices. Once the ROW was cleared, danger trees would be identified and selectively removed. Danger trees are trees outside the designated ROW that could fall into the transmission line and short it out or take it down. Timber volumes from these selected trees would be added to the timber sale.

Burning of slash is not currently planned as a means of disposal. However, while slash burning is unlikely, project delays may make it a necessary option to keep the project on course. Any such burning would be restricted to a few winter months during which impacts to the northern spotted owl would be minimized. Permit requirements for any potential slash burning are discussed in section 3.1.2.3.

2.4.1.3 Access Requirements

Surface access, either by vehicle or walk-in, to each pole location would be required during construction. Some access roads and spur roads to portions of the transmission line corridor were built 10 to 50 years ago. Many of these roads are still used for access to the existing 12-kV Trinity PUD line. These roads, with repair as necessary, would be used for access. Existing access roads would be used, with newly constructed short spurs up to pole locations from the

Table 2-1 Project Disturbed Land

Land Use	Calculation Method	Amount of Disturbed Land (acres)	Duration/Phase
Pole base (estimated 283 poles)	5-ft diameter per pole	0.1	Temporary/construction
Guy wire pockets (estimated 512 guy wires)	Calculated on the basis of a 10-ft × 5-ft pocket per guy wire outside the ROW	0.6	Temporary/construction
Site pull areas outside of ROW (estimated at 11 pulling sites)	Calculated on the basis of a 200-ft × 50-ft clearing outside the ROW per site	2.5	Temporary/construction
Construction staging areas	150 ft × 150 ft per staging area (two areas for Segments 1 and 2, and two areas for Segment 3)	2.1	Temporary/construction
Construction headquarters (HQ)	300 ft × 300 ft per HQ (one HQ for Segments 1 and 2, and one HQ for Segment 3)	4.1	Temporary/construction
Helipads	Calculated on the basis of four 200-ft-diameter and two 300-ft-diameter helipads (two for Segment 1, and four for Segment 3)	22.1 (includes 16 adjacent acres disturbed for staging/assembly areas)	Temporary/construction
Total temporary disturbance		31.5	
ROWs	Length of segment (Segment 1 would be 6.5 mi, Segment 2 would be 1.2 mi, and Segment 3 would be 8.5 mi) × 80-ft width of ROW	63.0 (Segment 1) 11.6 (Segment 2) 82.4 (Segment 3) 157.0 (total)	Permanent/construction and operation
Access roads outside of ROW	Length of road would be 1.2 mi; width of road would be 14 ft	2.0	Permanent/construction and operation
Switchyard	110 ft × 90 ft	0.2	Permanent/construction and operation
Total permanent disturbance		159.2	
Total project disturbance		197.7	

existing access roads where needed (**figure 2-2**). Spur roads would be left in place for future access but would be allowed to return to natural vegetation and would not be regularly maintained. However, spur road conditions would be inspected during future use. If requested by the land management agency, spur roads would be blocked to deter unauthorized use. Access requirements and construction equipment needed for new access roads would vary according to the terrain.

Repair or reconstruction of existing roads would involve clearing a travel way of brush and trees, reestablishing a minimum 10-ft-wide travel way by blading sloughs and eroded areas, removing ruts by blading as necessary, and installing water bars to prevent further rutting and erosion as necessary. Work would be done by using a road grader and/or backhoe.

Construction of new access roads would involve clearing and grubbing (removing stumps) of the road ROW, cutting and filling ground surfaces to establish a 10-ft-wide travel way, and installing drainage as necessary to prevent sedimentation and erosion. Work would be done by using a bulldozer or excavator.

For the entire project, it is anticipated there would be a need for a total of 4.4 mi of new roads: 1.2 mi outside the ROW and 3.2 mi inside the ROW. These would all be short spur roads from existing access to individual pole locations. Actual mileage needed would depend on the existing road network, topography, and final location of individual poles. New access road widths are generally 10 to 14 ft and increased to 20 ft in turn areas. In mountainous areas, new access roads would have a gradient of less than 15%; existing access roads have gradients up to 40%, and the steeper areas are accessible only by snowcat or off-highway vehicle (OHV). The locations of new access roads are shown in **figure 2-2**.

Where pole access for construction equipment is particularly difficult because of terrain, soil, slope, or other conditions, helicopter construction would be used. Permanent roads would not be established in areas where helicopter construction was required, but limited clearing and grading at pole locations would still be required so that maintenance equipment could be flown or driven to each pole site. Approximately 60 of the 103 new poles required in Segment 1 would be installed by using helicopter construction. The construction of access roads between pole locations 3/1 and 4/7 would be minimized, and ground disturbance would be limited to the minimum necessary to provide access to pole locations by tracked digging equipment (e.g., a hydraulic track drill needed to dig holes for utility poles that are brought in by helicopter) during construction.

Access to pole locations in Segment 2 would be made by using existing access roads, as described above for Segment 1.

For access to pole locations in Segment 3, existing county, logging, and access roads would be used wherever possible. This segment would require upgrading of some existing access roads (SPI logging roads), but most of them are wide and regularly maintained, with existing culverts Segment 3 was routed to take advantage of a less rugged ridge top and a main SPI access road system to minimize new road construction and disturbance of environmental resources. New spur roads might be required and would be maintained only during construction of the project.

Mileage of new spur roads in Segment 3 would depend on the existing road network, topography, and location of individual poles.

2.4.1.4 Construction Staging Areas

Segment 1 is estimated to require two construction staging areas, a headquarters facility, and two helicopter landing pads; all would be temporary facilities. In general, construction staging areas would be about 150 by 150 ft in size, and helicopter landing pads would have a diameter of 200 to 300 ft. Construction staging areas would be open areas not requiring clearing of trees. After construction activities, construction staging areas would be restored. Clearings would also be designated for the decking of logs. Any construction staging areas not covered by biological and cultural surveys previously conducted for the project would be surveyed before they were used. Mitigation measures for biological and cultural clearance of construction staging areas are described in Chapter 3, Affected Environment and Environmental Consequences.

The northern of the two helicopter pads in Segment 1 would be located immediately south of the Trinity Substation. This helicopter pad would use an existing concrete paved area at the site. The paved area is a deteriorated parking lot that was originally designated for the construction buildings for the Trinity Dam but later used as the parking area for the northern trailhead of the 4-mi-long North Lakeshore Trail.

The construction yard headquarters is the base station where employees report at the start and end of each day’s activities along the line. Headquarters facilities are used for other activities and functions. They include an office trailer; laydown areas; buildings for storage of materials, equipment, and vehicles; a mechanic’s garage; and security for these items. The headquarters facility for Segment 1 would likely be located at Trinity Power Plant. Headquarters facilities generally require an area of about 300 by 300 ft.

Segment 2 would use the two construction staging areas and log decking areas developed for constructing Segment 1, as described above.

It is estimated that Segment 3 would require the construction of two construction staging areas, a headquarters facility, and four helicopter landing pads, the latter of which may be combined with the construction staging areas. The headquarters facility for Segment 3 would likely be located along Browns Mountain Road within the ROW.

2.4.1.5 Pole, Line, and Conductor Removal

All poles currently supporting the existing 12-kV transmission line in Segment 1 would be removed by being cut off at ground level. The old cedar poles are not chemically treated and would be removed from the project site; reused by the landowner or manager; or cut up, chipped, and spread, according to the preference of the landowner or manager. Hardware, conductors, and insulators would be removed from the ROW and reused or recycled. Most of the components of the old line are reusable or recyclable.

2.4.1.6 Pole Delivery and Installation

Delivered by truck, pressure-treated wood utility poles would be stacked on supports at staging areas so they are off the ground and grouped according to length. Utility poles would be preserved by using oil-borne copper napthenate, which prevents decay, insect damage, and hardening of the pole to allow maintenance crews to climb the pole safely. Poles would be treated before being transported and installed at the project site.

In areas with good ground access, workers would use a derrick truck. Workers would slip a choker around the middle of the pole. The workers would balance the pole and mark the correct balance point. This mark would be used again when the pole was being readied to be set into the ground. By means of a choker, suspended from a winch line, the poles would be loaded onto a pole trailer (a flat bed truck) within the ROW. The crew would first set anchors for the pole and then dig a hole with an auger attached to the boom of the derrick truck. Each wood pole would be unloaded from the trailer by using the choker suspended from the winch line (attached to the boom). The pole would be moved into a position so that the bottom (butt) of the pole was lower for maneuverability. The pole would be placed on the ground and elevated on one end on a small support while the hole was dug. The pole would be suspended in a perpendicular position, about a foot off the ground. The shaft of the pole would be supported by a mechanical guide called a grabber. The pole would then be set into the hole, guided by the grabber. The pole would be adjusted so that it was vertical, and each hole would be filled with excavated soil. Any leftover soil would be spread around the base of the upright pole.

At each structure location on the ROW not accessible by conventional construction equipment (truck-mounted), a foundation crew would first set anchors for the pole and then excavate a hole, either with an auger attached to a tracked vehicle or by hand (hand auger and/or pick and shovel). Then from the staging area, a helicopter would be used to fly the poles to the structure site within the ROW and lower them into place in the previously excavated holes. Poles would be adjusted, and each hole would be backfilled with excavated soil. Any leftover soil would be spread around the base of the upright pole.

Blasting to facilitate excavating the holes for installing the transmission line wood poles would be required if large rocks (greater than 3 ft in diameter) or bedrock material was encountered. The blasting operation would consist of hand drilling or pneumatically drilling a small hole (less than 2 in. in diameter and 4 to 6 ft deep), then placing explosive material in the hole (approximately equal to a half stick of dynamite). The resulting small, controlled blast would fracture the rock, with little or no fly rock rising from the site. The blast would be like a loud thump, and the ground surface would be raised slightly (less than 1 ft), with some smoke and dust also rising from the site.

Pressure-treated wood utility poles and conductors for Segments 2 and 3 would be delivered by truck and installed as described above for Segment 1.

2.4.1.7 Conductor Installation

Conductor installation would involve setting up stringing equipment; hauling cable reels to the tensioning site; and distributing, assembling and installing insulators and insulator hardware at the pole sites. Conductors would be installed by tension stringing. Tension stringing is generally used to prevent the conductors from touching the ground or objects underneath the transmission line. Material and equipment would be delivered by truck or helicopter. The conductors, tensioner, puller, and other related equipment and material would be assembled at staging areas. Tensioning sites, about 0.25 acre in size, would be located along the route at intervals of 2 to 4 mi. Some could be located off the ROW where the line angles more than 15 degrees, so biological and cultural resources surveys would include a 200-ft radius at all angle points greater than 15 degrees. Mitigation measures requiring biological and cultural clearance surveys of pull sites are described in Chapter 3, Affected Environment and Environmental Consequences. A sock line would be pulled between poles through the conductor sheaves by construction personnel, vehicles, tractors, or helicopter, and the conductor would be pulled to a precalculated tension. Conductor splicing sites would be located at 2-mi intervals along the ROW. The final phase of construction would include final alignment of the conductors, termination, and final attachment.

Conductors for Segments 2 and 3 would be delivered by truck and installed as described above for Segment 1.

2.4.1.8 Cleanup and Restoration of Construction Areas

As sections of the transmission line are constructed, Western would make thorough inspections of the work to verify that it was built according to specifications and standards. Anything found out of compliance would be corrected. Cleanup work would consist of:

- Removing packing crate reels, shipping material, and debris, and disposing of them at an approved landfill site.
- Backfilling any holes or ruts in access roads, installing water bars, and doing final grading.
- Dressing work sites, pole sites, and log decks to remove ruts. Leveling, disking, and preparing areas for seeding, as required. There would be no holes from removing existing poles, because they would be cut off at ground level.
- Maintaining main access roads as needed for future maintenance work.
- Leaving spur roads in place but not regularly maintaining them. Spur roads would be final graded, have water bars installed, and be reseeded to encourage vegetative cover according to land management agency requirements.
- Repairing gates and fences to their original condition or better.
- Grounding any fences.
- Seeding and revegetation, undertaken as specified in mitigation steps.

- Removing construction staging areas and restoring the land according to the terms of the easement permit.

- Contacting property owners and processing any claims for settlement.

Access roads and disturbed areas would be monitored as part of routine line inspection activities, and the effectiveness of erosion control measures would be verified. Any active erosion discovered during monitoring would be repaired.

Cleanup and restoration of construction areas in Segments 2 and 3 would occur as described above for Segment 1.

2.4.2 Construction of Weaverville Switchyard

The proposed new Weaverville Switchyard would have a footprint of approximately 90 by 110 ft, which would be located next to an abandoned section of old Highway 299. An old highway section would be used for access to the new switchyard. Permission to occupy the proposed Weaverville Switchyard would be initially obtained through a ROW grant from the BLM. Eventually, Western would request conveyance of the site through sale, pursuant to section 203 of the FLPMA. Any commercial timber resulting from clearing the site would be purchased from the BLM under one of the timber contracts.

Two spur lines would be required to connect the new switchyard to PG&E's 60-kV transmission line, which would be acquired by Trinity PUD. The span of this 60-kV line between the two spur line connection points would be removed. The spur lines would replace one span of the existing line, thus looping the line in and out of switching equipment in the proposed new switchyard. In addition, a 12-kV station service would be required from the new switchyard to Trinity PUD's existing 12-kV distribution line to provide power to the new switchyard. (This is a different 12-kV line than the inactive Trinity-Lewiston 12-kV line in Segment 1 of the project.)

2.5 PROJECT OPERATION AND MAINTENANCE

Typical activities associated with operating and maintaining transmission lines would occur once the new line was constructed. The proposed transmission line system would operate at 60 kV. The amount of power transferred along the conductors would vary depending on seasonal and time-of-day loads, as well as other system demands. Western's power system dispatchers would direct day-to-day and emergency transmission line operation in accordance with Western's power system operations manual (PSOM) and in cooperation with adjacent control areas and systems. Western would be responsible for maintaining the proposed transmission system by monitoring, testing, and repairing the line and terminal equipment. Maintenance crews would likely be provided by Trinity PUD, since they would be located closest to the proposed transmission line location. Typical maintenance activities would include:

- Periodic routine aerial inspections with emergency aerial inspections after storms, severe wind, lightning, or other weather conditions or after reported vandalism.

- Periodic and emergency ground inspections, normally conducted no more than once a year.
- Routine maintenance to inspect and repair damaged structures, conductors, and insulators.
- Wood pole inspection and maintenance, if necessary.
- Emergency maintenance to immediately repair transmission lines damaged by storms, floods, vandalism, or accidents. Emergency maintenance would involve prompt movement of crews to repair damage.
- Access road inspection and maintenance to regrade and repair erosion-control features and gates.
- Vegetation management activities, as needed, to maintain conductor clearance, including cutting, trimming, lopping, and clearing trees. Low-growing shrubs and brush would be retained for ground cover and erosion control purposes.
- Control of noxious weeds, if found. Application of herbicides might be necessary to control noxious weeds and prevent regrowth of undesirable or incompatible vegetation. Herbicide application would be in accordance with the *Integrated Vegetation Management Environmental Guidance Manual* (IVM; Western 2007a) and land management agency requirements.

Some land use impacts could occur during routine maintenance activities and increase during emergencies. Western would restore damaged areas or compensate landowners as appropriate when responsible for damage. In general, emergency activities are infrequent and, in most cases, restricted to a small area.

2.6 COMMITTED MITIGATIONS FOR THE PROPOSED ACTION

2.6.1 Proposed Action Mitigation Measures

The mitigation measures that follow are included as part of the design, construction, operation, and maintenance of the project. Western would be performing or overseeing construction and be responsible for implementing these measures. However, agency-specific requirements for environmental protection measures (EPMs) would also be implemented and are described later. The mitigation measures were developed to reduce environmental consequences associated with construction activities. Environmental consequences for each resource area (chapter 3) assume that the mitigation measures that are specified by each agency and appear in **table 2-2** would be fully implemented. Western would use these practices on both public and private lands. In accordance with DOE NEPA implementing procedures (10 CFR 1021.33), Western would prepare a mitigation action plan (MAP) for implementing any mitigation commitments expressed in the Record of Decision (ROD) following this EIS. Such commitments, in turn, would be based on mitigation measures described in **table 2-2**. The MAP would describe how the mitigation measures would be planned and implemented. The mitigation measures would be implemented

Table 2-2 Project Mitigation Measures

Resource Area	Mitigation Measure
3.1 Air Quality	Clearing, access road, transmission line, and Weaverville Switchyard construction, and maintenance activities: During these activities, EMPs include the following: • Vehicles and equipment used in construction and maintenance of the proposed action or alternatives would maintain appropriate emissions control equipment and be appropriately permitted. • Exhaust emissions from all off-road equipment would not exceed 40 percent opacity for more than three minutes in any one hour. • Equipment and vehicles that show excessive emissions of exhaust gases due to poor engine adjustments or other inefficient operating conditions would not be operated until corrective repairs or adjustments were made. • Removal of low growing vegetation and ground disturbance would be limited to the minimum necessary to complete ROW requirements. Low growing vegetative cover would be maintained on all other portions of the project area. • Road construction would include dust-control measures such as watering and other approved suppressing agents for limiting dust generation during construction
3.1 Air Quality	Airborne asbestos: As presented in **figure 3.1-2**, the project area is not in an area considered to be likely to contain natural occurrences of asbestos in California (CDC 2000); hence, it is not expected that project construction activities would result in emissions of asbestos. However, in accordance with Title 17 of the California Code of Regulations, Section 93105, “The Asbestos Airborne Toxic Control Measure (ATCM) for Construction, Grading, Quarrying and Surface Mining Operations,” if it is determined that naturally occurring asbestos, serpentine, or ultramafic rock is present before construction begins, or is discovered after construction has begun, the regulation would apply, and the construction contractor would need to comply with the applicable requirements of the ATCM.
3.1 Air Quality	Slash treatment: Slash could be treated in a number of ways to minimize its impact on the environment and potential for fire hazard. For the proposed action, slash would be removed from the project site or, in special cases as approved by the landowner, would be treated by lop and scatter, chipping, and spreading. Chipping would result in minor amounts of gaseous emissions from fuel-fired portable and mobile equipment. No burning of slash would be done. Incidental burning of trash and brush would be minimized; required approvals and permits would be obtained.
3.1 Air Quality	Diesel emissions: There are currently no plans to employ portable diesel engines, which can emit criteria pollutants and diesel particulate matter (DPM) (considered to be a toxic air contaminant). However, any portable engines (i.e., not self-propelled) that may be needed for the project would be registered under the State portable equipment registration program (PERP) or have a permit issued by the NCUAQMD.
3.2 Biological Resources	Terms and conditions developed during the consultation period under section 7 of the ESA would be adhered to as specified in the Biological Opinions of the USFWS and NMFS. In addition, mitigation or conservation measures developed in conjunction with the California Department of Fish and Game (CDFG) would be followed.
3.2 Biological Resources	All personnel entering the project area would be required to undergo environmental awareness training prior to entering the construction area. The training would address Federal, State, and tribal laws regarding antiquities, fossils, plants, and wildlife, including collection and removal, and the importance of these resources and the purpose and necessity of protecting them. The list of all persons trained would be kept during the course of construction.

Table 2-2 (Cont.)

Resource Area	Mitigation Measure
3.2 Biological Resources	To the extent possible, grading and grubbing of low-growing vegetation cover would be avoided on all new spur roads and structure pad locations, and all vehicular traffic would have to drive within the designated ROW and travel at safe speeds (e.g., 10 to 15 mi per hour [mph]).
3.2 Biological Resources	Vehicle operation off the ROW shall be prohibited or limited to existing roads.
3.2 Biological Resources	Staging of equipment and parking of vehicles would be restricted to previously disturbed areas to the extent practical.
3.2 Biological Resources	During construction, no equipment would be refueled and no oil would be changed within 300 ft of any water body or stream. Oil spill cleanup kits would be available on site in the event an accidental spill occurred.
3.2 Biological Resources	Construction activities within the Riparian Reserve would follow the limits of disturbance by the project.
3.2 Biological Resources	Vegetation would be controlled or removed in accordance with the IVM (Western 2007a) and land management agency requirements.
3.2 Biological Resources	Low-water crossings would require the placement of native rock or clean, washed gravel in the stream channels to minimize construction traffic impacts.
3.2 Biological Resources	Regulated materials would not be drained onto the ground, into streams, or into drainage areas. All construction waste, including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials, would be properly disposed of.
3.2 Biological Resources	All noxious weed populations would be identified within the project area and flagged prior to construction activities. Any identified populations would be treated by using a recognized vegetation treatment identified by the USFS, BLM, and Reclamation and would comply with applicable plans (e.g., the STNF LRMP [USFS 1988, 1995]).
3.2 Biological Resources	Herbicides would be used when needed to control noxious weeds. Herbicides shall be applied by licensed applicators in accordance with Federal and California State regulations, and label directions. On USFS-administered lands, application rates would not exceed those analyzed in the risk assessments presented in appendix D. The approved permits would be obtained prior to their implementation.
3.2 Biological Resources	If direct control methods or removal of noxious weed infestations in construction disturbance areas was not feasible, the noxious plants could be cut and destroyed in a manner that was acceptable to the land management agencies.
3.2 Biological Resources	Equipment would have to be cleaned before entering the ROW. In addition, in areas with noxious weed infestations, vehicles and equipment that had driven through or parked in a weed-infested area would have to be cleaned before they left the area.
3.2 Biological Resources	Disturbed areas would be reseeded with regionally native species in accordance with applicable land management agency requirements, then mulched with certified weed-free straw.
3.2 Biological Resources	Noxious weeds would be monitored for 3 years after construction activities, and any identified infestations would be treated with the appropriate and approved methods.
3.2 Biological Resources	Silt fences would be placed on the downstream sides of all tower pole augering locations.
3.2 Biological Resources	If helicopter use cannot be scheduled to avoid the raptor nesting/breeding period (approximately April 15 to August 15), then preconstruction raptor nest searches would be conducted to identify nesting raptors in the project area. A qualified biologist would conduct project-area-wide raptor nest surveys in viable habitats for listed species prior to commencement of construction. The following measures would be incorporated to minimize helicopter noise impacts: • Helicopter pads would be buffered by using ridges or other solid sound-attenuating landscape features where available and practical. • Helicopter flight paths would be designed to provide buffering distance from nest activity areas of listed species.

Table 2-2 (Cont.)

Resource Area	Mitigation Measure
3.2 Biological Resources (Cont.)	• Helicopter flight paths would use terrain features that would reduce noise impacts to any identified sensitive species nest locations.
3.2 Biological Resources	All construction activities would be restricted to designated work areas, with all off-ROW vehicle use occurring only on existing, designated roads, including new spur roads.
3.2 Biological Resources	The line over the two Trinity River crossings would be marked with the best technology currently available to alert bald eagles and other birds to the presence of an obstruction.
3.2 Biological Resources	The recommendations in the National Bald Eagle Management Guidelines (USFWS 2007d) should be followed.
3.2 Biological Resources	Northern spotted owl habitat improvements conducted by the USFS would be funded by Western at a ratio of 5 acres improved for every acre disturbed in critical habitat, 7 acres improved for each acre disturbed in nesting and roosting habitat, and 3 acres improved for each acre disturbed in areas capable of becoming northern spotted owl habitat.
3.2 Biological Resources	Funds to enhance fisher habitat would be provided to the degree that the proposed action would adversely alter existing fisher habitat.
3.2 Biological Resources	Immediately prior to construction, clearance surveys for sensitive plants and wildlife would be conducted by a qualified biologist for spur roads and other areas that would require surface disturbance activities.
3.3 Cultural Resources	Before construction, all supervisory construction personnel would be instructed on the types of resources (cultural, paleontological, and ecological) that might require protection and on the location of known sensitive areas. To assist in this effort, the construction contract would address applicable Federal, State, and tribal laws regarding antiquities, fossils, plants, and wildlife, including collection and removal, and the importance of these resources and the purpose and necessity of protecting them.
3.3 Cultural Resources	Western would conduct on-site cultural resource awareness training for all construction and field personnel. All field personnel would be required to stop work within 100 ft of any inadvertent discovery and immediately notify Western's Environmental Manager. Western would have a qualified archaeologist who meets the Secretary of the Interior's standards come to evaluate and assess the find, in consultation with the State Historic Preservation Officer (SHPO) and local tribes, if the site is prehistoric in nature. Known significant cultural resources in the area would be delineated in the field and avoided.
3.3 Cultural Resources	Where ground-disturbing activities are identified, construction activities would avoid all historic properties, or a special use permit or mitigation plan would be developed in consultation with the SHPO.
3.3 Cultural Resources	Irrigation system features that are eligible for the *National Register of Historic Places* (NRHP) would be avoided during the siting of new transmission line structures and access roads, and most other irrigation system features would be avoided to the extent practicable in siting new structures and access roads.
3.3 Cultural Resources	Documentation of historic properties that could be impacted by the project would include but not be limited to detailed measured drawings of the various components of the property and thorough photo documentation of all parts of the historic property. Additional documentation requirements could be identified through consultation with the California SHPO, tribal organizations, or any other consulting parties.
3.4 Geology and Soils	Areas with unstable slopes would be avoided to the extent possible. Impacts due to slope instability might be mitigated by grading.
3.4 Geology and Soils	Highly erodible areas would be avoided to the extent possible. Long-term impairment to soil productivity, hydrologic function, and environmental health due to compaction, loss of organic matter, loss of large woody material, and erosion would be mitigated by following the EPMs outlined in section 3.4.2.2.

Table 2-2 (Cont.)

Resource Area	Mitigation Measure
3.4 Geology and Soils	Excavated material or other construction materials would not be stockpiled or deposited near or on stream banks, lake shorelines, or other watercourse perimeters where they could be washed away by high water or storm runoff or could encroach, in any way, upon the watercourse.
3.5 Land Use	All construction-caused deep ruts would be restored to preconstruction condition, as practical and when permitted by weather and ground conditions. Roads would also be graded and sloped, and water bars and other erosion control features would be installed per land management agency requirements.
3.5 Land Use	Upon completion of the work, all work areas except access trails would be scarified or left in a condition that would facilitate natural revegetation, provide for proper drainage, and prevent erosion. Re-seeding could be used in areas where establishment of natural vegetation would prevent erosion.
3.5 Land Use	During construction, movement would be limited to the access roads and within a designated area in the ROW to minimize damage.
3.5 Land Use	Construction operations would be conducted to prevent unnecessary destruction, scarring, or defacing of the natural surroundings to preserve the natural landscape to the extent practicable.
3.5 Land Use	No permanent discoloring agents would be applied to rocks or vegetation to indicate limits of survey.
3.5 Land Use	Damaged fences and gates would be repaired or replaced to restore them to their preconstruction condition.
3.6 Noise	Construction occurring within 2,000 ft (below 60 dBA) of a residential dwelling, designated campground or recreational facility, or other noise-sensitive receptors near the transmission line ROW would be limited to Monday through Saturday and limited to 7:00 a.m. to 8:00 p.m. on any day except Sunday in accordance with the Trinity County noise ordinance. Construction on Sunday is prohibited.
3.6 Noise	Construction equipment would be equipped with manufacturer-recommended mufflers or the equivalent.
3.6 Noise	Construction equipment would be turned off when not in operation.
3.6 Noise	Equipment engine covers would be maintained on the apparatus as designated by the manufacturer.
3.6 Noise	Equipment used for project construction would be hydraulically or electrically powered whenever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatically powered tools was unavoidable, an exhaust muffler on the compressed air exhaust would be used.
3.6 Noise	External jackets on the tools would be used where feasible. Quieter procedures would be used, such as drilling rather than using impact equipment, whenever possible.
3.6 Noise	Stationary noise sources would be located as far from existing sensitive receptors as possible. If stationary sources have to be located near existing sensitive receptors, they would be adequately muffled and enclosed within temporary sheds, or portable sound blankets would be used.
3.6 Noise	Although the use of helicopters would be limited to specific remote pole locations and logging operations and be of short duration, such use represents a potential impact to noise-sensitive areas at campgrounds, residential dwellings, and other recreational sites. Therefore, the following mitigation measures are proposed: • Minimize the use of helicopter construction traffic to the extent practical. • Minimize helicopter flights at low altitudes (under 1,500 ft) near noise-sensitive receptors except at locations were only helicopter activities can perform the task. • Minimize helicopter operations near campgrounds along Lewiston Lake and near the community of Lewiston when feasible.

Table 2-2 (Cont.)

Resource Area	Mitigation Measure
3.6 Noise	Although blasting is anticipated, it would not likely be near noise-sensitive locations. However, blasting noise does pose a potential impact. Therefore, the following mitigation is proposed to reduce any potential noise impacts that could result if rock drilling and blasting were required for construction of the project transmission pole footings: • Blasting would be conducted only when other practicable excavation methods were not available. • In the event that blasting is necessary, it would be conducted only during the hours of 8:00 a.m. to 4:00 p.m., Monday through Friday. • Sensitive receptors within areas in which noise from blasting would be greater than 10 dB above ambient noise levels would be provided advance notification of the date and time of any blasting activities. • If blasting was necessary, a blasting plan would be developed and approved by the USFS, BLM, Reclamation, and any other appropriate regulatory agencies. Elements of the blasting plan are presented below under mitigation measures for Section 3.8, Public Health and Safety.
3.7 Paleontological Resources	Although paleontological resources in the project area have been determined to be insignificant, there is always a possibility of finding these resources during construction. Therefore, recognition of fossils would be discussed as part of the environmental training program established for construction of the project. If a fossil was uncovered, stop work procedures would be implemented in the area, and a qualified paleontologist would be consulted to evaluate the resource.
3.8 Public Health and Safety	Blasting, using small charges, for some pole excavations is anticipated, and a blasting plan would be developed for these operations. The development of a blasting plan would be in accordance with recognized industrial standards and governmental regulations.
3.8 Public Health and Safety	The use of explosives for construction activities would be transported and used by a California licensed contractor, under contract to the project proponent or specified general contractor, who would ensure compliance with State of California Safety Orders (Cal-OSHA), article 8, section 1564, and California Vehicle Code, Division 14 requirements for vehicle transportation of explosives on public roadways, as applicable. All blasting would be conducted by a subcontractor with a valid California blaster license pursuant to Cal-OSHA article 8, sections 1550–1580.
3.8 Public Health and Safety	A site-specific blasting plan would be developed for the project. General elements of a blasting plan normally include these: • Designate a qualified individual as "Blast Officer" to have authority over all actions and operations related to blasting. • List the names, qualifications, and detailed responsibilities of all personnel who would be involved with the blasting or otherwise responsible for transporting, handling, or storing the explosives. • List all incidental personnel and other personnel authorized to be within the danger zone during blasting operations. • List the dates and location of blasting. • Identify the type and quantity of explosives and detonating or initiating devices to be used at the site. • Identify the means of transporting explosives to the site. • Ensure that all applicable permits and licenses have been obtained. • Identify minimum acceptable weather and static conditions and considerations for stray radio frequency energy and electrical current where electrical initiation will be used. • List standard procedures for handling, setting, wiring, and firing explosive charges. • List personal protective equipment (PPE) to be used or available at the site.

Table 2-2 (Cont.)

Resource Area	Mitigation Measure
3.8 Public Health and Safety (Cont.)	• Identify minimum standoff distance, means for clearing, and controlling access to blast danger area. • Develop an emergency action plan (e.g., telephone numbers of local emergency response organizations; location/telephone number of nearest medical facility; action to be taken when a person is injured; Materials Safety Data Sheets [MSDSs], etc.).
3.8 Public Health and Safety	Personnel involved in excavation work would receive training to recognize potentially contaminated soil or groundwater from the general contractor's assigned health and safety officer. Excavation personnel (e.g., contractors or subcontractors) would be trained to identify potential soil contamination or groundwater situations prior to start of work. This training would also include instructions regarding further work activities at the site and reporting procedures if contamination is suspected.
3.8 Public Health and Safety	During excavation, if soil or groundwater contamination was suspected (e.g., unusual soil discoloration or strong odor), the contractor or subcontractor would immediately stop work and notify the general contractor's assigned health and safety officer. Work near the excavation site would be terminated, and appropriate health and safety procedures would be implemented for the location by the general contractor's assigned health and safety officer. Preliminary samples of the soil, groundwater, or material would be taken by an Occupational Safety and Health Administration (OSHA) trained individual. These samples would be sent to a California certified laboratory for characterization. If contamination was not found to be above regulatory limits, work would be allowed to proceed at the site. However, if contamination was found above established limits, the regulatory agency responsible for responding to and for providing environmental oversight of the region would be notified in accordance with applicable regulations.
3.8 Public Health and Safety	The project proponent, in consultation with the general contractor and regulatory agency, would complete the following steps for each site identified as having potential contamination: • Step 1 – Investigate the site to determine whether it has a record of hazardous material contamination that could affect construction activities. This investigation would usually be performed as a Phase I environmental site assessment (ESA). • Step 2 – Perform a characterization study of the site to determine the nature and extent of the contamination that is present at the location before development activities proceed at the site. • Step 3 – Determine the need for further investigation and/or remediation of the soils, groundwater, or surface water conditions on the contaminated site. (For example, if there would be little or no contact with contaminated materials, industrial cleanup levels would likely be applicable. If site activities could involve human contact with the contaminated materials, such as might be the case with residential use, then Step 4 should be completed. If no human contact or disturbance is anticipated, then no further mitigation would be required for the location.) • Step 4 – If it is determined that extensive contamination contact would accompany the intended construction of the site, a Phase II environmental site investigation (ESI) involving sampling and further site characterization would be undertaken. Should further investigation reveal high levels of hazardous materials, health and safety risks would be mitigated according to applicable regulations or requirements. This would include site-specific health and safety plans, work plans, and/or remediation plans.

Table 2-2 (Cont.)

Resource Area	Mitigation Measure
3.8 Public Health and Safety	Electric shock along fences paralleling electric transmission lines is not a significant factor for 60-kV transmission lines. However, during construction of the proposed transmission line, Western would perform a survey along the corridor to determine if long conductors (e.g., metal fences) were present. If these conductors were identified and found to have the potential of generating shock, the project proponent would contact the owner of the fence and provide grounding as required by applicable code (National Electrical Code [NESC]).
3.8 Public Health and Safety	Herbicides would be handled in a manner to avoid accidental spills and ensure worker and public safety. All applicable herbicide spill requirements would be followed, including containment and cleanup procedures.
3.9 Socioeconomics and Environmental Justice	Any land temporarily required for construction of the proposed facilities (such as conductor pulling sites, material and equipment storage areas) would be arranged through temporary-use permits or by specific arrangements between the construction contractor and affected landowners. Similar arrangements would be made with business owners to avoid or minimize disruptions in their business (posting detours and limiting the area and time of disruption, obtaining temporary-use permits or by specific arrangements between the construction contractor and affected landowners or through purchase at fair market value).
3.9 Socioeconomics and Environmental Justice	With the exception of Federal lands, if a new ROW was needed, Western would acquire land rights (easements) in accordance with applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646), as amended. Easements would be purchased through negotiations with landowners at fair market value, determined by independent appraisals. The landowner would normally retain title to the land and could continue to use the property in ways that would be compatible with the transmission line.
3.10 Traffic and Transportation	Traffic controls would be implemented at locations of ingress and egress of construction vehicles on public roadways as necessary to ensure that safe driving conditions were maintained throughout the project area. These traffic controls could include, but would not be limited to, ensuring that the locations of newly constructed access road intersections or intersections along public roadways were highly visible. The general contractor in charge of construction activities would place signage and/or provide traffic control crews at select locations as necessary to ensure that motorists were aware of the presence of crossing or slow-moving construction vehicles.
3.10 Traffic and Transportation	To mitigate potential safety concerns associated with logging trucks, the project proponent shall assure the contracted logging company establishes ingress and egress traffic controls along public roadways as necessary to ensure that safe driving conditions are maintained at all potential risk locations and along regional roadways. Helicopter offloading of logs would be away from local roadways, so they would not impact traffic along local dirt access roads. However, loading of logging trucks could result in periodic blockage of some dirt access roads, but warning signage and other safety practices used by the logging industry would be employed to minimize traffic hazards for these operations. The blockage of these roads would be temporary and would not result in significant impacts.
3.10 Traffic and Transportation	Following construction, or during construction as necessary to maintain safe driving conditions, any damage to existing roadways caused by construction vehicles would be repaired in accordance with applicable specifications established by Federal, Trinity County, Caltrans, or private landowners.
3.10 Traffic and Transportation	The USFS has a fee schedule regarding the use of roadways in its jurisdictional area. This fee schedule is based on logging use on its roadways and is intended to cover roadway maintenance. The project proponent would reimburse the USFS according to its fee schedule for roadway maintenance. However, if the project proponents restored the roadways to preconstruction or better conditions in accordance with an agreement with the USFS, fees would be waived.

Table 2-2 (Cont.)

Resource Area	Mitigation Measure
3.11 Visual Resources	Any steel poles used for the project would be made of weathering steel, which is self-rusting and would turn dark flat brown.
3.11 Visual Resources	Some vegetative screening would be provided between County Road (CR) 105 and the existing ROW. Additional ROW clearance would be on the uphill side of the existing ROW (Segment 2), which would be cleared as needed for safety and operational reliability. Smaller shrubs and vegetation would be maintained in order to aid in screening. As described in section 3.5, a 150-ft buffer would be maintained between CR 105 and the transmission line.
3.11 Visual Resources	Existing vegetation would provide screening along the boundary of Weaverville Switchyard. This buffer would aid in screening the switchyard from this public road.
3.11 Visual Resources	Development footprints would be minimized by placing staging areas in previously disturbed areas and away from sensitive receptors.
3.12 Water Resources	Excavated material or other construction materials would not be stockpiled or deposited near or on stream banks, lake shorelines, or other watercourse perimeters where they could be washed away by high water or storm runoff or could encroach, in any way, upon the watercourse.
3.12 Water Resources	Irrigation system features would be avoided to the extent practicable in siting new structures and access roads.
3.12 Water Resources	Dewatering work for structure foundations or earthwork operations adjacent to, or encroaching on, streams or watercourses would be conducted to prevent muddy water and eroded materials from entering the streams or watercourses with construction of interceptors.
3.12 Water Resources	Drainage control structures would be used where necessary to direct surface drainage away from disturbance areas and to minimize runoff and sediment deposition downslope from all disturbed areas. These structures include culverts, water bars, and cross drains.
3.12 Water Resources	Earth material would not be excavated from, nor would excavated material be stored in, any stream, swale, lake, or wetland (USFS Region 2 2000).
3.12 Water Resources	Roads and trails would be kept out of wetlands. Crossing bottoms would be set at natural levels of channel beds and wet meadow surface. Actions that might dewater or reduce water budgets in wetlands would be avoided (USFS Region 2 2000).
3.12 Water Resources	Soil-disturbing actions would be avoided during periods of heavy rain or wet soils. Travel restrictions would be applied to protect soil and water (USFS Region 2 2000).
3.12 Water Resources	Equipment and vehicles would not be washed in streams or wetlands (CASQA 2003).
3.12 Water Resources	Vegetated buffers would be maintained near streams and wetlands. Silt fences could be used along edges of streams and wetlands to prevent erosion and transport of disturbed soil, including spoil piles (CASQA 2003).
3.12 Water Resources	Sediment discharge into streams, lakes, and wetlands near construction sites would be minimized (CASQA 2003). • Vegetated buffers on slopes could be used to trap sediment and promote groundwater recharge. • Riparian vegetation could be planted and used to stabilize stream banks. • Earth dikes, swales, and lined ditches could be used to divert work-site runoff that would otherwise enter a disturbed stream. • Certified weed-free straw bale barriers could be installed to control sediment in runoff water. Straw bale barriers would be installed only where sediment-laden water could pond, thus allowing the sediment to settle out.

Table 2-2 (Cont.)

<table>
<tr><th>Resource Area</th><th>Mitigation Measure</th></tr>
<tr><td>3.12 Water Resources (Cont.)</td><td>Check dams (i.e., small barriers constructed of rock, gravel bags, sandbags, or fiber rolls) could be placed across a constructed swale or drainage ditch to reduce the velocity of flowing water, allowing sediment to settle and reducing erosion.
In an effort to minimize road construction and the effects associated with it, the construction of access roads between pole locations 3/1 and 4/7 would be limited to the use of tracked hole digging equipment, such as a hydraulic track drill, during construction.</td></tr>
<tr><td>3.12 Water Resources</td><td>Stream channel/wash crossings would be built.
Where access road improvements or new access roads are required to allow heavy construction equipment access, the approaches to stream crossings would be rocked to minimize sedimentation on USFS and BLM land. On SPI land, the whole road would be graveled.
Rocked ford crossings would be used. Sites with a low potential for erosion would be selected for building fords. The fords would be constructed of clean, washed gravel or rocks and built in dry summer months. Cellular confinement system blocks could be used to reduce sediment entering into the streams. Fisheries agencies would be consulted with regard to the design of the rocked fords.</td></tr>
<tr><td>3.12 Water Resources</td><td>Roads and other disturbed sites would be constructed to minimize sediment discharge into streams, lakes, and wetlands (USFS Region 2 2000).
All roads, trails, and other soil disturbances would be designed to meet the minimum standard for their use and to “roll” with the terrain as feasible. Slope hill cuts would be minimized.
Erosion controls that complied with county, State, and Federal standards would be applied, and practices such as erecting jute netting, silt fences, and check dams near disturbed areas would be implemented.
Filter strips and, if needed, sediment traps would be used to keep all sand-sized sediment on the land, and disturbed soil would be isolated from streams, lakes, and wetlands. Runoff would be dispersed into filter strips.
Sediment traps would be keyed into the ground and cleaned out when 80% full.
Sediment would be removed to a stable, upland site with a gentle slope and revegetated.
Heavy equipment would be kept out of filter strips except when used to do restoration work or build hardened stream or lake approaches. Logs would be gathered out of each filter strip with minimum disturbances of ground cover.
Road ditches and cross drains would be designed to limit flow to ditch capacity and prevent ditch erosion and failure.
Cross drains would be installed to disperse runoff into filter strips and to minimize the amount of disturbed areas connected to the drains.
Cross drains would be spaced from no more than 120 ft apart in highly erodible soils on steep grades, to no more than 1,000 ft apart in resistant soils on flat grades.
Cross drains would be emptied onto stable slopes that dispersed runoff into filter strips. On soils that might gully, outlets would be armored to disperse runoff.
Cross-drain spacing would be tightened so gullies would not be created.
Ditches would not be disturbed during maintenance unless maintenance was needed to restore drainage capacity or repair damage. The cut slope would not be undercut.</td></tr>
</table>

Table 2-2 (Cont.)

Resource Area	Mitigation Measure
3.12 Water Resources	New sources of chemical and pathogenic pollutants would be placed where they could not reach surface water or groundwater (USFS Region 2 2000). • Sanitary sites and drill pads would be placed outside the water influence zone. • Vehicle service and fuel areas, chemical storage and use areas, and waste dumps and areas would be located on gentle upland sites. Mixing, loading, and cleaning would be done on upland sites with gentle slopes. Chemicals and containers would be disposed of in State-certified disposal areas.
3.12 Water Resources	Runoff controls would be applied to isolate new pollutant sources from surface water and groundwater (USFS Region 2 2000). • Contour berms and trenches would be installed around vehicle service and refueling areas, chemical storage and use areas, and waste dumps to fully contain spills. Liners would be used as needed to prevent seepage into groundwater.
3.12 Water Resources	Chemicals would be applied by using methods that minimized the risk of them entering surface water and groundwater (BLM 2005). • When pesticides and herbicides would be used, the goal would be to minimize unintended impacts to soil and surface water bodies. Common practices would include but not be limited to: (1) minimizing the use of pesticides and herbicides in areas with sandy soils near sensitive areas; (2) minimizing their use in areas with high soil mobility; (3) maintaining the buffer between herbicide and pesticide treatment areas and water bodies; (4) considering the climate, soil type, slope, and vegetation type in determining the risk of herbicide and pesticide contamination; and (5) evaluating soil characteristics prior to pesticide and herbicide application, to assess the likelihood of their transport in soil. • Pesticides with half-lives of 3 months or less would be favored. They would be applied at the lowest effective rates, as large droplets or pellets. Label instructions would be followed. Selective treatment would be favored. Only aquatic-labeled chemicals would be used in the water influence zone. • Nontoxic, nonhazardous drilling fluids would be used when feasible.
3.12 Water Resources	Runoff from the construction site would be controlled and would meet the RWQCB stormwater requirements. An NPDES permit would be obtained from the RWQCB.
3.12 Water Resources	An erosion and sedimentation control plan, as well as an SWPP plan, would be prepared in accordance with applicable Federal and State regulations.
3.13. Wilderness and Recreation	Some recreational uses occurring within the existing or proposed ROW would require temporary closure or limited access. Proper signage would be posted in these areas for the duration of the closure.

consistent with applicable regulatory and industry standards for any activity proposed. However, the site conditions that warrant certain mitigation measures would not be present at all project locations, and implementation of the measures might not be required there. At each portion of the project area, site conditions would be evaluated, and applicable mitigation measures would be applied. Therefore, some of the mitigation measures described in **table 2-2** are contingencies to ensure reduced environmental consequences.

2.6.2 Western Area Power Administration Environmental Protection Measures

Western has issued standard construction practices that would be implemented for the construction of the new and upgraded transmission lines and switchyard portions of the project. These standard practices were derived from Western's mitigation measures as found under

Construction Standards, Standard 13, “Environmental Quality Protection,” and are described below (Western 2003).

- All construction vehicle movement outside the ROW normally would be restricted to predesignated access, contractor-acquired access, or public roads.

- The area limits of construction activities normally would be predetermined, with activity restricted to and confined within those limits. No paint or permanent discoloring agents would be applied to rocks or vegetation to indicate limits of survey or construction activity.

- In construction areas where recontouring was not required, vegetation would be left in place whenever possible, and the original contour would be maintained to avoid excessive root damage and allow for resprouting.

- In construction areas (e.g., staging yards, structure sites, spur roads from existing access roads) where ground disturbance was substantial or where recontouring was required, surface restoration would occur as required by the landowner or land management agency. The method of restoration normally would consist of returning disturbed areas back to their natural contour, reseeding (if required), installing cross drains for erosion control, placing water bars in the road, and filling ditches.

- Watering facilities and other range improvements would be repaired or replaced if they were damaged or destroyed by construction activities to their condition prior to disturbance as agreed to by the parties involved.

- Structures and/or ground wire would be marked with highly visible devices where required by governmental agencies (e.g., Federal Aviation Administration [FAA]).

- Prior to construction, all construction personnel would be instructed on the protection of cultural, paleontological, and ecological resources. To assist in this effort, the construction contract would address (a) applicable Federal, State, and tribal laws regarding cultural resources, fossils, plants and wildlife, including collection and removal; and (b) the importance of these resources and the purpose and necessity of protecting them.

- Cultural resources would continue to be considered during post-EIS phases of project implementation in accordance with applicable requirements of the NHPA, SHPO, and tribes.

- Western would respond to individual complaints of radio or television interference, generated by the transmission line by investigating the complaints and implementing appropriate mitigation measures (e.g., adjusting or using filtering devices on antennas). The transmission line would be patrolled on a regular basis so that damaged insulators or other transmission line materials that could cause interference would be repaired or replaced.

- Western would apply mitigation needed to eliminate problems from induced currents and voltages on conductive objects sharing the ROW, to the mutual satisfaction of the parties involved.

- Western would continue to monitor studies performed to determine the effects of audible noise and electrostatic and electric and magnetic fields (EMF) to ascertain whether these effects are significant.

- Roads would be built at right angles to washes to the extent practicable. Culverts would be installed where needed. All construction and maintenance activities would be conducted in a manner that would minimize disturbance to vegetation, drainage channels, and intermittent or perennial stream banks. In addition, road construction would include dust-control measures during construction in sensitive areas. All existing roads would be left in a condition equal to or better than their condition prior to the construction of the transmission line.

- All requirements of those entities having jurisdiction over air quality matters would be adhered to, and any permits needed for construction activities would be obtained. Open burning of construction trash would not be allowed unless permitted by appropriate authorities.

- Fences and gates would be repaired or replaced to their original condition prior to project disturbance as required by the landowner or the land management agency if they were damaged or destroyed by construction activities. Temporary gates would be installed only with the permission of the landowner or the land management agency.

- Transmission line materials would be designed and tested to minimize corona. Tension would be maintained on all insulator assemblies to assure positive contact between insulators, thereby avoiding sparking. Caution would be exercised during construction to avoid scratching or nicking the conductor surface, which might provide points for corona to occur.

- No nonbiodegradable debris would be deposited in the ROW. Slash and other biodegradable debris would be left in place or disposed of in accordance with agency requirements.

- Hazardous materials would not be drained onto the ground or drainage areas. Totally enclosed containment would be provided for all trash. All construction waste, including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials, would be removed to a disposal facility authorized to accept such materials.

- Special-status species or other species of particular concern would continue to be considered during post-EIS phases of project implementation in accordance with management policies set forth by the appropriate land managing agency. This activity might entail conducting surveys for plant and wildlife species of concern along the proposed transmission line route and associated facilities (i.e., access and spur roads, staging areas) as agreed upon by the land managing agency. In cases where such species were identified, appropriate action would be taken to avoid adverse impacts on the species and its habitat, which might include altering the placement of roads or structures as practicable and monitoring construction activities.

- The alignment of any new access roads would follow the designated area's landform contours where possible, providing that such alignment did not additionally impact resource values. This activity would minimize ground disturbance and reduce scarring (visual contrast).

- Except for repairs necessary to make roads passable, no widening or upgrading of existing access roads would be undertaken in the area of construction and operation, where soils or vegetation were sensitive to disturbance.

- In designated areas, structures would be placed to avoid sensitive features such as, but not limited to, riparian areas, water courses, and cultural sites, or to allow conductors to clearly span the features within limits of standard structure design. This activity would minimize the amount of disturbance to the sensitive feature or reduce visual contrast.

- With the exception of emergency repair situations, ROW construction, restoration, maintenance, and termination activities in designated areas would be modified or discontinued during sensitive periods (e.g., nesting and breeding periods) for federally listed species or other sensitive or special-status animal species.

- Western would require that all ROW and temporary use areas be surveyed for federally listed species or other sensitive or special-status species and cultural resources prior to ground-disturbing activities.

Mitigation measures specified by section 7 consultation with the USFWS and National Oceanic and Atmospheric Administration (NOAA) regarding Endangered Species Act (ESA) compliance and section 106 consultation with the SHPO regarding NHPA compliance will also be implemented.

Additional mitigation measures that apply to USFS-, BLM-, and Reclamation-managed land are discussed below. Western would comply with each agency's specific mitigation measures to the extent possible; however, Western's underlying need is to ensure reliable operation of the Federal transmission system. Therefore, the specific agency mitigation measures described below might be modified as needed by Western, in accordance with USFS, BLM, and/or Reclamation, in order to comply with applicable reliability standards.

2.6.3 U.S. Forest Service Environmental Protection Measures

In addition to Western's environmental protection measures, the USFS mitigation measures include those measures resulting from the environmental analysis in the EIS pertaining to the construction and operation of the new and upgraded transmission lines and substation and switchyard portions of the project. Mitigation measures outlined in section 2.5 and the standards as summarized below will be included in the Special Use Permits and Timber Sales Contract. Many of these items will be described in greater detail in the construction, operation, and maintenance (COM) plan.

- Roads would be constructed, reconstructed, maintained, and decommissioned according to USFS standards.

- The holder would have to notify the USFS 30 days prior to beginning routine vegetation maintenance. In emergency situations, the holder would have to notify the USFS within 48 hours of the hazardous emergency situation.

- Complete clearing of underlying vegetation is limited to an area of 30 ft from towers and/or poles and 15 ft from the center of access routes within the ROW corridor. Western would promote a stable, low-growing plant community on the ROW for grasses and shrubs. This type of plant community would be compatible with transmission line facilities, serving as an environmentally acceptable and useful ground cover and naturally retarding the regrowth of tall-growing vegetation. The frequency of future ROW maintenance operations and potential interruption of service would be reduced.

- Underbrush might be masticated, chipped and broadcast, or piled for burning, to control vegetation or to reduce the fire hazard.

- Work could be done by hand or with machines. No machine work would be done on slopes of more than 35%.

- Riparian vegetation could be left in the ROW as long as it did not compromise mandatory reliability standards or conflict with the IVM (Western 2007a).

- Treatments of fuels by maintenance activities would be developed so there would not be an unacceptable increase in the fuel loading capacity for a particular area.

- Noxious weeds would be controlled.

- Limited operating periods might be imposed for certain segments of the ROW corridor because of the presence of federally listed species or other sensitive or special-status species.

- Heavily disturbed areas would be restored to pre-project conditions.

- Safety precautions and a fire plan would be implemented.

- A safety plan for helicopter use would be coordinated by Western and signed by all agencies as required.

- Brush (in addition to slash) would be removed from the project site or lopped or chipped and spread in areas where there were dense concentrations of brush damaged from tree felling. Areas would be identified by the sale administrator.

- Best management practices for water quality management (USFS 2000) will be implemented during construction, operation, and maintenance activities.

2.6.4 Bureau of Land Management Environmental Protection Measures

BLM has adopted stipulations for telephone or power line ROWs that would be implemented for the construction of the new and upgraded transmission lines and substations. These stipulations are summarized below. Mitigation measures outlined in section 2.5 and the stipulations as summarized below will be included in the COM plan.

- Holder shall notify the BLM Redding Field Office 30 days prior to beginning vegetation maintenance. ROWs not previously cleared for cultural, threatened, endangered, and sensitive species will need to be evaluated for these resources, and those of high sensitivity may need to be field evaluated. Consultation with the BLM Redding Field Office should occur well in advance of the clearing in previously unevaluated areas. Known locations of cultural resources of significance, and threatened, endangered and sensitive resource sites may need to be avoided by the ROW actions as determined in consultation with the authorized officer.

- Vegetation removal (clearcutting) is limited to an area of 30 ft from towers and/or poles and 15 ft from center of access routes within the ROW corridor. Outside the clearcut areas, removal of trees will be limited to those that will encroach on vertical line clearance (within 25 ft) within the next 10 years. Beyond the clearcut areas, vegetation should be thinned a maximum distance of 30 ft between main stems. Underbrush may be mulched or masticated for vegetation control or to reduce fire hazard.

- Vegetation removal should concentrate on removal of manzanita (*Arctostaphylos* spp.) and leave toyon (*Heteromeles arbutifolia*), oaks (*Quercus* spp.), and other less common species.

- Work can be done by hand or with brush masticating machines. No machine work on slopes over 35%.

- Do not cut riparian vegetation unless individual trees are within vertical line clearance.

- Written authorization must be received prior to the application of herbicides or pesticides on BLM-administered lands (45 days prior notice required).

- Prior to cutting trees greater than 6 in. DBH, BLM may require that they be cruised and purchased from BLM.

- Prior to October 15th each year, the ROW holder shall annually monitor the ROW for erosion and rehabilitate all gullies and rills deeper than three inches occurring within the ROW. Holder is responsible for the placement and use of adequate erosion control structures and materials. Mulches used shall not contain viable non-native plant parts or seed. Holder shall monitor access route ROWs outside of the main ROW annually for the first two years and at least once every five years thereafter and prior to October 15 rehabilitate all gullies and rills deeper than three inches. If gullies or rills are identified by BLM, the holder shall rehabilitate within 30 to 60 days of notification unless directed otherwise.

- Vegetation located in deep draws or canyons should not be removed or trimmed unless it encroaches into the legislated mandatory reliability standards.

2.6.5 Bureau of Reclamation Environmental Protection Measures

Reclamation has adopted the EPMs of Western, USFS, and the BLM, as described above. No additional measures specific to the Reclamation would be required for the project.

2.7 ALTERNATIVES CONSIDERED AND ELIMINATED

Western considered alternatives during the project planning process. System and route alternatives, as described below, were considered prior to defining the proposed action. Among Western's planning objectives were to locate the new transmission line along the shortest route with the fewest landowners and to utilize existing transmission corridors and access roads to the maximum extent possible. The proposed action met the purpose and need of the participating agencies.

2.7.1 System Alternatives and Analysis

The Trinity PUD requested that Western conduct a feasibility study for the purpose of evaluating a direct interconnection to the Western 230- to 60-kV transmission system near the Trinity Power Plant. Western's study included the technical evaluation of several system alternatives in addition to the proposed action. Those alternatives are shown schematically in **figure 2-5** and are described in further detail below.

Four main system alternatives were developed that could possibly meet the objective of improving electric reliability by establishing a new direct interconnection:

- System Alternative 1 consisted of parallel Western and PG&E transmission lines via a new 230- to 60-kV transmission interconnection between Western's 230-kV transmission system at Trinity Dam and the Trinity PUD's Douglas City 60-kV Substation. This alternative would result in an overloaded element because of the parallel connection between Western and PG&E, as well as overloads due to contingency conditions. The levels of overloading suggest that the current carrying capacity of a 60-kV transmission line would be inadequate for a configuration of this type. Increasing the equipment voltage would greatly increase the project costs; therefore, this alternative would not be feasible. This alternative would not improve the current operation concerns.

- System Alternative 2 was the same as Alternative 1, except that Western's and PG&E's transmission lines would not be operated in parallel. The two lines would be isolated via a set of disconnect switches located between PG&E's Trinity Substation and Trinity PUD's Mill Street Substation. This configuration would allow Trinity PUD to operate as a radial load served solely by Western's transmission system. This alternative would result in no overloads during normal or contingency operations. However, should an outage occur on this transmission line, Trinity PUD loads would be without power until Western service could be restored or until PG&E could close the switches between Trinity Substation and Mill Street Substation. Therefore, because reliability would remain inadequate, this alternative would not be feasible. This alternative would continue to expose the Trinity PUD load to blackout conditions.

- Under System Alternative 3, Western's and PG&E's transmission lines would run in parallel via an interconnection near Western's 230-kV J.F. Carr Substation. This design would consist of looping PG&E's Cottonwood-Trinity 115-kV transmission line into a new 230/115-kV substation in or adjacent to Western's Carr Substation. This alternative would result in no overloads during normal operations, but it would result in severe overloads during contingency operations, suggesting that the 115-kV transmission line would have inadequate current-carrying capacity for contingency situations. Increasing the equipment voltage would greatly increase the project costs; therefore, this alternative would not be feasible.

- System Alternative 4 would be a pair of parallel Western and PG&E transmission lines. It would involve looping PG&E's Cascade-Lewiston 60-kV transmission line into a new 230/60-kV substation in or adjacent to Western's J.F. Carr 230-kV Substation. This alternative would result in overloads for both normal and contingency operations, in some cases in excess of 500%, suggesting that the 115-kV transmission line would have inadequate current-carrying capacity for contingency situations. Increasing the equipment voltage would greatly increase the project costs; therefore, this alternative would not be feasible.

The system design selected for the project was the only system alternative found to be technically viable and economically feasible.

2.7.2 Routing Alternatives and Analysis

Other alternatives considered included several different routings for the project. Four main routing alternatives were considered, which are shown in **figure 2-6** and summarized below:

Routing Alternative 1 is an alternative alignment of Segment 1, from the Trinity Power Plant to the Lewiston Substation. With this alternative alignment, the line would follow along County Road (CR) 105, on the west side of the Trinity River from Trinity Dam to Lewiston Lake. There is an existing 12-kV distribution line along this route, the “Westside” line. However, this line is being used to serve existing residential customers in the vicinity and cannot be overbuilt with the proposed line. Overbuilding this line would cause problems for the existing customers, including a long outage time during replacement of the line. The existing 12-kV line passes over mobile home residences along its route. This situation is allowed for distribution-level lines, but buildings under transmission lines are not allowed by code. The existing line is already closer to CR 105 than is allowed by the Whiskeytown-Shasta-Trinity National Recreation Area standards (36 CFR 292.13 (c) (1)). A transmission line on the existing ROW or adjacent to it would violate the 150-ft buffer zone established by this regulation. Additionally, a 60-kV line would require more ground clearance and would have to be built higher, requiring new ROW. This alignment would also disturb a larger amount of residential, recreational, and wildlife habitat lands than would the proposed action, and it would require additional rerouting of the line.

- Segment 1, as described above for the proposed action, would follow the existing ROW from Trinity Dam down river approximately 6.5 mi toward Lewiston, thereby limiting the need for additional disturbance to residential, recreational, and wildlife habitat lands. The USFS also preferred a location of the transmission line on the east side of the Trinity River within the existing ROW, which would place it within a previously disturbed area; create less impacts to residential, recreational, and wildlife habitat lands; create less new visual resource elements; and be more consistent with USFS land management guidelines. The “Westside” routing option was found to be associated with a number of serious issues at the concept level, and it offered no offsetting advantages, so it was dropped from further consideration.

- Routing Alternative 2 is an alternative alignment of Segment 2, the tap line from Lewiston Tap to Lewiston Substation. With this alternative alignment, the tap line would follow a similar path to Segment 2 of the project, but it would be located further west of Trinity Dam Boulevard. This option was briefly considered to potentially reduce visual impacts from Trinity Dam Boulevard. This alignment would require more clearing and access road construction and a longer tap line than would the proposed action. It would result in more impact to undisturbed and recreational land and would be more costly. Segment 2, as described above for the proposed action, would parallel an existing Trinity PUD distribution line along Trinity Dam Boulevard. Existing access roads would be used, thereby limiting the need for additional clearing and access road construction. The route would also be shorter than would be required for Routing Alternative 2. The USFS preferred a more eastern location of the tap line adjacent to an existing Trinity PUD line, which would place it within a previously disturbed area with existing access roads; create less impact to recreational lands; and be more consistent with USFS land management guidelines. Since field investigation determined that the routing option did not offer improved visual screening sufficient to warrant incurring the increased disturbance impacts, this alignment alternative was not pursued further.

- Routing Alternative 3 is an alternative alignment of the western terminus of the line (Segment 3) that would cross further north than described for the proposed action. This alignment was initially part of the proposed action, as it would parallel the PG&E Cottonwood-Humboldt 115-kV transmission line, consolidate ROWs, and utilize existing PG&E access roads. However, for the past several years, Trinity County has been considering replacing the existing Weaverville Airport with a new airport at a new location. This alternative alignment would pass through the new airport location favored by Trinity County.

- Western continued to investigate possible alternatives to the proposed action even as the Draft EIS was published. Routing Alternative 4, an underwater cable alternative that would replace Segment 1, was identified and evaluated for viability. Under this alternative, the 60-kV line would exit the Trinity Substation and immediately change into an underwater cable as it entered the Trinity River next to the substation. The underwater cable would continue downstream in the river (actually the upper reaches of Lewiston Lake), extend through most of Lewiston Lake, and exit the lake at a point nearest to the three-way switch location west of the fish hatchery. This alternative would end at the three-way switch location.

  Advantages of this alternative would include the elimination of both Trinity River crossings, avoidance of all the rugged terrain through the STNF, and avoidance of impacts to terrestrial species in Segment 1. Access roads would not have to be improved or constructed, and clearing of the ROW and widening it to 80 ft on the forest would be avoided, as would sedimentation from ground disturbance. The main environmental disadvantage would be sedimentation within Lewiston Lake, because trenching for the underwater cable would be necessary, at least in the shallower portions of the lake. The equipment needed for the transition from underwater cable to overhead line at both ends of the underwater segment would be located near Trinity Dam Boulevard, and would have some level of visual impact on this route.

  Western engineers conducted a preliminary review of the concept. Some of the construction and engineering issues were related to getting underwater cable-laying equipment (which is usually seagoing) to an inland lake; trenching in very shallow water; cable weight and the logistics of delivery and transfer to the cable-laying equipment; splicing; long-term maintenance, including keeping some sort of barge on the lake that could raise the cable for repairs; and the potential for extended outages if the cable failed. Repairing an underwater cable would be much more difficult and time-consuming than repairing an overhead line, although it is expected that the number of outages would be substantially fewer than for an overhead line. Preliminary estimates of the costs of materials indicate that underwater cable is prohibitively expensive for small projects like the proposed action, even before the additional costs of resolving the technical issues cited above are known. Since power system reliability is a key component of Western’s purpose and need, and the costs of this alternative were not economically feasible, the underwater alternative, Routing Alternative 4, was determined to be not viable, and it was eliminated from further consideration.

In recent years, Trinity County has experienced an increase in recreation and tourist industries, which depend on aviation facilities and their related services. Trinity County has determined that the improvements needed to meet the goals and objectives of the master plan at the existing Weaverville Airport should not be pursued, as the site does not comply with FAA standards for obstruction clearance, runway gradient, or runway/taxiway separation for design aircraft. In addition, the existing airport is constrained by topography and surrounding land use. Twelve alternative locations were originally evaluated for the new airport. Four existing county-owned airports were also considered as alternative sites to replace the existing airport. All four existing sites were rejected as not meeting the future airport's goals and objectives. Three alternative airport sites were found to most closely fit the new airport requirements; these were evaluated for environmental consequences, and a site crossed by the existing PG&E line was considered the best location. In order to avoid a conflict with Trinity County's airport plans and because of the possible need to move the proposed line at a later date, another route was developed to follow an existing road network further to the south.

The proposed route also has the advantage of placing the proposed transmission line near the existing PG&E radial 60-kV line, the Trinity-Douglas City Transmission Line, to be acquired by Trinity PUD. The new line needs to be located under or within 50 ft of the existing PG&E line in order to loop into it. Locating the new line further north, as described above for Routing Alternative 3, would require a new corridor, while locating it adjacent to the existing PG&E line would allow an existing corridor to be used. Therefore, because Routing Alternative 3 would conflict with the favored potential alternative airport site and would require a new corridor, this option was not considered further.

The routing selected for the project was the only routing alternative found to be reasonable, technically viable, and economically feasible.

2.8 CONNECTED ACTION – UPGRADES AT THE TRINITY SUBSTATION

The following describes proposed improvements to be made at the Trinity Substation; these improvements are not part of the proposed action but are considered connected actions. Under NEPA, actions are connected if they (1) automatically trigger other actions that may require environmental review, (2) cannot proceed unless other actions are taken previously or simultaneously, and (3) are independent parts of a larger action and depend on the larger action for justification. The distribution line inter-connection and construction constitute a known connected action that would not take place without this EIS. It is discussed here under the same project description. In addition, the following presents a description of the footprint of the connected action and any actions, alternatives, and impacts to be considered as part of the proposed action as required under NEPA.

The Trinity PUD has requested an upgrade to an existing 12-kV distribution line oriented southwest of Trinity Dam Powerhouse and the construction of a 21-kV distribution line that would connect to a take-off structure at the Trinity Substation that parallels Powerhouse Road. The proposed new 21-kV inter-connection, construction, and upgrade of an existing 12-kV distribution line would supply the power to the Trinity Powerhouse, provide reliable power to several of Trinity PUD's existing customers, and provide for redundant backup at the Trinity

PUD Lewiston Substation. Trinity PUD would construct/upgrade the 21-kV distribution line to include overhead fiber optic cable that connects Western's Trinity Substation control house to the Reclamation's Trinity Power House. The fiber optic cable would provide communication between the Substation and Reclamation's Power Plant.

Figure 2-7 provides an aerial photograph of the footprint and alignment of the proposed 21-kV distribution line segment and the existing 12-kV distribution line. The construction of the proposed 21-kV distribution line segment would involve the installation of about 10 wood poles and 1,300 ft of new overhead conductor lines and fiber optic cable. The poles would be 50 ft in height and installed to a depth of about 7 ft. The poles would be located along the west side of Powerhouse Road and extend north-west up a hill slope to connect to an existing 12-kV line. The project footprint is an approximately 1,300-ft-long and 40-ft-wide ROW. In addition, as part of the 21-kV distribution line construction, Trinity PUD would construct a small, 36 ft × 52 ft switching junction in the proposed 21-kV alignment near the Trinity Substation.

No new access roads are required, as all construction activities for the proposed line would utilize Power House Road. Poles would be installed using an auger bore drill. The ROW for the proposed 21-kV distribution line is on land owned by Reclamation. Reclamation will be required to issue an easement agreement with Trinity PUD for this undertaking.

The original landscape and topography of the area below Trinity Dam has been severely impacted by the construction of Trinity Dam, which occurred between 1957 and 1962. The hillside for the proposed alignment of the 21-kV ROW has been graded and excavated over the years. No special status or cultural resources have been observed during the surveys for this proposed 21-kV distribution line. Additional impacts of this connected action, therefore, would be minor.

2.9 NO ACTION ALTERNATIVE

Under the no action alternative, no upgrades or rebuilds to the existing transmission line system would be constructed in the Trinity area, and the existing 12-kV distribution line would be left in place. For the PG&E lines currently serving the Trinity PUD load, structures and hardware would be maintained, repaired, and/or replaced as required during routine maintenance activities or in the event of emergency outages of the transmission lines. Repairs and maintenance would increase in frequency as the transmission lines aged.

Implementing the no action alternative would preclude most of the anticipated effects to the environment that would be associated with the project. Long-term adverse socioeconomic impacts might occur as a result of the no action alternative, because regional electric demands would not be met and unreliable delivery and shortages would continue to occur.

Under the no action alternative, other actions and construction activities with associated adverse environmental effects could be required to improve the electric system and provide reliable electric power in the area. Ongoing maintenance activities related to the existing transmission lines, including vegetation management, would have continuing visual and environmental effects on a periodic basis.

Table 2-3 presents a summary of the environmental impacts of the project and the no action alternative that is based on the analyses in chapter 3 of this EIS. The table presents impacts that would result from constructing, operating, and maintaining the proposed transmission line segments and the Weaverville Switchyard.

Table 2-3 Summary of Impacts

Affected Environment	Proposed Project	No Action Alternative
Air Quality	Short-term impacts to air quality would occur during construction and periodic maintenance of the ROW and access roads. The increase of air emissions after applying the applicable EPM would be well below the significance thresholds. The proposed project is not in an area considered likely to contain natural occurrences of asbestos. A permit and approval would be obtained by the USFS prior to any burning. No diesel-fired sources are planned; however, should any of these type of sources be needed, they would be registered under the portable equipment registration program or have a permit issued by the District. No significant impacts to air quality would result from the proposed project.	The ROW would not be increased and new transmission lines would not be constructed under the no action alternative. Air emissions would not be increased. There would be no significant impacts to air quality.
Biological Resources • Vegetation	Construction and operation would result in the permanent loss of about 2.2 acres of vegetation for access roads and the Weaverville Switchyard and would alter up to 157 acres of vegetation within the ROW. An additional 31.5 acres of vegetation would be temporarily impacted during construction. The extent of disturbance to mixed conifer hardwood forest would be a small fraction of the remaining area of similar adjacent communities. The proposed project would have a less than significant impact on vegetation communities. Disturbed sites would be monitored for noxious weeds. Any colonizing noxious weeds would be actively controlled via an approved control methodology. The proposed action would not result in the uncontrolled expansion of noxious weeds and would be a less than significant impact.	Under the no action alternative, the existing 12-kV distribution line would remain in the existing ROW but would not be energized. Other actions and construction activities required to improve the electric system and provide reliable electric power in the area could result in the alteration of vegetation similar to the impacts from the proposed project.

Table 2-3 (Cont.)

Affected Environment	Proposed Project	No Action Alternative
Biological Resources • Terrestrial Wildlife	The minimal losses of wildlife that would result from construction activities or temporary displacement during construction activities would be insignificant in a regional context. Wildlife displacement and mortality is a short-term impact that would not result in a regional decline in any populations of terrestrial wildlife. If blasting does occur, it would be of short duration, and there would be no measurable long-term effect on population numbers or distribution over a species range of occurrence. Wildlife near the helicopter flight path and designated landing areas would be exposed to an increase in noise levels of short duration (e.g., usually less than five minutes). With proposed mitigation measures to reduce bird mortality (e.g., state-of-the art marking devices and spacing between conductors), impacts from the transmission line would not affect the biological viability of local, regional, or national populations of bird species. The proposed project would have a less than significant impact on terrestrial wildlife with the incorporation of EPMs.	Under the no action alternative, the existing line would present an ongoing potential for bird collisions. Other actions and construction activities required to improve the electric system and provide reliable electric power in the area could result in impacts on terrestrial wildlife similar to the impacts from the proposed project.
Biological Resources • Fisheries	The proposed project would not directly disturb suitable habitat, individual fish, or populations within the Trinity River, Rush Creek, or Little Browns Creek. Therefore, there would be no significant impacts to fisheries.	Under the no action alternative, the existing line would not be a cause of significant impacts to fisheries. Other actions and construction activities required to improve the electric system and provide reliable electric power in the area could result in fisheries impacts similar to the impacts from the proposed action.

Table 2-3 (Cont.)

Affected Environment	Proposed Project	No Action Alternative
Biological Resources • Federally Listed Species • Designated Critical Habitat	<u>Bald eagle (recently delisted)</u>: No nests have been identified within the project area. Electrocution hazards would be minimized by line spacing, conductor layout, utility pole construction, and use of state-of-the-art marking devices, where necessary. The proposed project would have a less than significant impact on the bald eagle, with the incorporation of environmental protection and conservation measures. <u>Northern spotted owl (threatened)</u>: The project intersects the 1.3-mi home range buffer surrounding three nests that were active in 2007 and 2006, as well as eight other historic nest sites. The project applicant would conserve and manage off-site acreage to mitigate the loss of northern spotted owl habitat, including about 35.4 acres of designated critical habitat. The proposed habitat conservation measures, distance standards for Riparian Reserves, and general project specifications and conservation measures ensure that the proposed action would not contribute to the further decline of the northern spotted owl. <u>Coho salmon (threatened)</u>: This anadromous fish species has access to the Trinity River, Rush Creek, and Little Browns Creek; each stream contains designated critical habitat. No construction activities would occur within these streams. Construction could result in short-term increases in sedimentation and turbidity in the downstream reaches of the streams and their tributaries traversed by the project. Summer construction to avoid the spawning season, the use of sediment fences, and implementation of the Riparian Reserve limits of disturbance standards would reduce impacts to a less than significant level. The proposed action would not directly impact any coho salmon designated critical habitat. <u>Pacific fisher (candidate)</u>: Two incidental sightings of the Pacific fisher were documented during the 2006 northern spotted owl surveys. The proposed action would not act as a barrier to Pacific fisher movement, as the existing transmission line corridor and existing networks of road have not precluded their use of the project area. The proposed habitat conservation measures for Riparian Reserves and the general project specifications and conservation measures ensure that the proposed action would not contribute to the need for the species to become listed or result in a significant impact.	Under the no action alternative, the existing line would present an ongoing potential for collisions to the bald eagle and northern spotted owl. Other actions and construction activities required to improve the electric system and provide reliable electric power in the area could result in impacts on federally listed species or designated critical habitat similar to impacts from the proposed project.

Table 2-3 (Cont.)

Affected Environment	Proposed Project	No Action Alternative
Biological Resources • USFS and BLM Sensitive Species	Of the species that are listed by the USFS and BLM, the northern goshawk and foothill yellow-legged frog may occur in the project area. Implementation of the proposed action may adversely impact individuals but would not be likely to result in a loss that would cause a trend to Federal listing or a loss of rangewide species viability.	Under the no action alternative, the existing line would present an ongoing collision potential to the northern goshawk. Other actions and construction activities required to improve the electric system and provide reliable electric power in the area could result in impacts on USFS and BLM sensitive species similar to the impacts from the proposed project.
Biological Resources • Wildlife Management Indicator Assemblage	Five assemblages are present in the project area. Construction of the project would result in the removal of some assemblage types and the shifting of others to another type. On the basis of the forestwide trend patterns detailed in section 3.2, the project-level habitat impacts would not alter or contribute to existing forestwide trends. These shifts, losses, and removals of habitat would be very small in relation to forestwide trends and well within the margin of error in measuring these patterns.	Under the no action alternative, the existing line would not cause any further alterations of assemblage types. Other actions and construction activities required to improve the electric system and provide reliable electric power in the area could result in impacts on assemblage types similar to the impacts from the proposed project.
Biological Resources • Survey and Manage/ Aquatic Conservation Strategy	No populations of the Survey and Manage mollusk or plant species were found during the 2006 field surveys. Therefore, it is not anticipated that any direct, indirect, or cumulative impacts would occur to Survey and Manage species as a result of the potential lack of individuals or populations in the proposed project area. The proposed action is in compliance with the 2001 Survey and Manage Record of Decision.	Under the no action alternative, the existing line would not cause any further impacts on Survey and Manage Species. Other actions and construction activities required to improve the electric system and provide reliable electric power in the area could result in impacts to Survey and Manage species.

Table 2-3 (Cont.)

Affected Environment	Proposed Project	No Action Alternative
Biological Resources • Riparian Reserves	Riparian Reserve areas would be crossed on USFS lands. Since the project would follow the prescribed limits of disturbance within classified Riparian Reserves, construction of the project would have a less than significant impact.	Under the no action alternative, the existing line would not cause any further impacts on Riparian Reserves. Other actions and construction activities required to improve the electric system and provide reliable electric power in the area could result in impacts similar to the impacts from the proposed project.
Cultural Resources	Sixteen historic era sites, two electrical power lines, one residential complex, and two isolated features have been identified within the project's area of direct effects. Western has made preliminary determinations of eligibility for the identified resources and will consult with the California Office of Historic Preservation on final determinations of eligibility and effects on historic resources for the project. Although Western will continue to consult and update tribes throughout the proposed action, no traditional cultural properties or other concerns have been raised by the tribes.	Impacts would be restricted to existing transmission line and existing access road maintenance. Repair to the transmission lines or structures could involve localized ground disturbance from heavy equipment. Vegetation removal by hand or mechanical equipment may be necessary to improve access roads or access to individual transmission line structures.
Geology and Soils	Trinity County has a history of low seismic activity. Geotechnical hazards would be evaluated during final design specification for each pole location and road construction area. Selecting sites with stable conditions, correcting unstable slope conditions, and implementing EPMs would reduce hazardous site-specific geologic conditions. The areas where soil erosion may be increased are narrow and spread over a large area, thereby reducing the potential for impacts. Development of an erosion and sedimentation control plan and implementing the EPMs would reduce geology and soil erosion impacts to less than significant levels.	The existing distribution line would remain in place and would be periodically accessed using the existing ROW and access roads. The no action alternative would result in no additional impacts to geology and soil resources over current conditions.

Table 2-3 (Cont.)

Affected Environment	Proposed Project	No Action Alternative
Land Use	Construction of the project would use existing ROW, or where required, new ROW would cross undeveloped land. The project would not remove houses or other buildings and would not displace people or disrupt or divide the physical arrangement of an established community. The project would cross Reclamation lands and lands subject to three land use plans (USFS, BLM, and Trinity County) and the Trinity County's Zoning Ordinance. The proposed action would not conflict with BLM or Trinity County land use policies or Reclamation zones. With the implementation of the EPMs, the potential conflict with USFS land use policies would be reduced to less than significant.	The no action alternative would not result in direct or indirect effects to land use.
Noise	Most of the project traverses undeveloped areas with few if any noise-sensitive areas. Noise-sensitive areas include Ackerman Campground, isolated residential areas near Jessup Gulch Road, the Trinity River Fish Hatchery, and residential areas near the community of Lewiston. Elevated noise levels during construction would be periodic and occur over a relatively short period of time (e.g., a few weeks). Blasting has a low probability of occurring, especially near or adjacent to sensitive receptors. If it does occur, it would be of short duration. Noise associated with the use of helicopter(s) for construction of the transmission line is not anticipated to be significant because of the rural nature of the project area, the short duration the helicopter will spend at each site, and the fact that most of the helicopter operations would be less than 60 dBA near noise sensitive receptors. The transmission line would be designed to minimize conductor point discharge sources, which could be a source of corona activity that would generate audible noise levels. The specifications for electrical equipment would be developed so they would comply with the sound level required by industry standards, governing regulations, or local ordinances. Maintenance-related noise levels would be similar to those for construction, although they would be less frequent and intense. With the implementation of EPMs, noise impacts would be less than significant.	Under the no action alternative, no facilities would be constructed. Current noise levels would remain unchanged.
Paleontological Resources	Most of the rocks found in Trinity County are normally poor sources of fossil materials. The project area has a "low sensitivity" for finding scientifically significant fossils. Therefore, impacts to paleontological resources would likely be insignificant.	No facilities would be constructed. No disturbance or activities would occur above existing conditions. Therefore, there would not be any potential to impact unknown paleontological resources.

Table 2-3 (Cont.)

Affected Environment	Proposed Project	No Action Alternative
Public Health and Safety and Hazardous Materials	The general public health and safety conditions would not change as a result of the proposed action. The proposed action would not alter any emergency response plan or interfere with emergency response vehicles or pose a hazard to public or private airports. Solid and hazardous wastes would be disposed of at facilities permitted for handling and disposing of waste. In accordance with National Electrical Safety Code (NESC) requirements, induced currents from the transmission lines would be 5 mA or less. Therefore, the potential for electric shock would be less than significant. The electric and magnetic fields at the edge of and within the project transmission line ROW would be less than the threshold values. The Weaverville Switchyard and most of the transmission line would be located in uninhabited areas. With implementation of the EPMs, impacts to public health and safety and hazardous materials are determined to be less than significant.	Under the no action alternative, the frequent electrical service outages that have occurred would continue to present potential public health and safety impacts.
Socioeconomics and Environmental Justice	The small number of outside workers (16) would not cause a major or regionally measurable change in employment, community services, or housing availability or measurably increase the population of Trinity County. The proposed action would not displace or cause a major disruption to businesses. There would not be a disproportional affect to minority or low-income populations. The increased reliability of the energy supply to commercial and industrial users might contribute indirectly to economic growth and additional tax revenues in Trinity County but would not, in and of itself, induce growth. The project would not have a significant impact on socioeconomics or environmental justice.	The no action alternative would continue to use the existing transmission lines and would result in no additional direct, indirect, or cumulative effects to the population, housing, income, or community services of the project area. However, the current issues regarding system reliability would remain.

Table 2-3 (Cont.)

Affected Environment	Proposed Project	No Action Alternative
Traffic and Transportation	As a result of the current very low traffic volumes on local roadways and the low number of construction-related trips each day along most of these roadways, construction traffic would not change the existing level of service or result in significant traffic delays along these rural access routes. Construction activities and equipment movement would follow applicable highway safety requirements and Caltrans and Trinity County traffic regulations. Helicopter operations would comply with all applicable Federal Aviation Administration (FAA) regulations and are not anticipated to pose impacts to populated locations or private or public airports. Operation, inspection, and maintenance traffic would occur infrequently and would typically involve one or two vehicles and two to four workers per year. With implementation of applicable traffic regulations, FAA regulations, and EPMs, traffic and transportation impacts would be less than significant.	Under the no action alternative, no facilities would be constructed, and project-related traffic would not be generated. No traffic or transportation impacts would occur above current conditions.
Visual Resources	The project falls into USFS Management Areas R and PR for visual resources, as well as BLM Class III lands. The project would be consistent with the management objectives for these classes. However, changes resulting from the project could alter the visual quality of the area. Some sensitive areas for scenery may not be screened by vegetation because some of the existing vegetation would be removed when the current ROW is widened. The new Weaverville Switchyard would be a new facility but small and partially screened from State Route (SR) 299. A majority of the project is in remote areas where some portions are viewed as being highly sensitive for scenery but where there are few viewers. EPMs would reduce visual impacts to the extent possible. Therefore, the project is anticipated to have less than significant impacts to visual resources.	The no action alternative would result in no additional direct or indirect effects on visual resources. However, effects resulting from the existing wood poles and distribution line would continue to modify the visual quality in the project area. The poles are a consistent intrusion into the landscape and would continue to result in a less than significant impact.
Water Resources	Vegetation removal, grading, excavation, and other soil-disturbing activities would create erosion and sediment discharge into nearby streams. Water needed during construction would be obtained from more than one existing source, impacts would be short term, and water use would be extremely limited. The transmission line would span streams and wetlands, and no structures or facilities (i.e., poles, or foundations) would be located within waterways or wetlands. Disturbances within streams from the existing and new access road crossings include the placement of clean rocks in streams, removal and/or replacement of culverts, gravelling of a road across dry streams, and/or the	The existing distribution line would remain in place. Existing access roads would continue to be used. The no action alternative would result in no additional impacts to water resources in the project area over current conditions.

Table 2-3 (Cont.)

Affected Environment	Proposed Project	No Action Alternative
Water Resources (Cont.)	lowering of the grade of the approaches at some locations. The majority of the new poles would be located outside the floodplains. Where installation of new poles within floodplains is determined to be unavoidable, proposed structures would be designed to withstand flood events. An erosion and sedimentation control plan and a stormwater pollution prevention plan would be developed to reduce sedimentation impacts. Implementation of these plans and the EPMs would reduce water resource impacts to less than significant.	
Wilderness and Recreation	Although there are no developed recreational activities or facilities along the project ROW, dispersed recreation might occur on a sporadic basis through unspecified recreational areas along the ROW, such as the nature trails and roadways. These areas could be temporarily affected during expansion of the existing ROW and construction of the new ROW. Ground construction of Segment 1 would not affect water-based activities along the Trinity River and Lewiston Lake, because of the setback of the existing ROW from these activities. All helicopter flights for the project would be coordinated with the USFS in advance, to minimize disturbance to recreation users. Increased OHV use resulting from the project is anticipated to be less than significant. If requested by the land management agency, spur roads would be blocked to deter unauthorized use. The project would not result in the loss of any dedicated recreational activities or facilities. Impacts to wilderness and recreation would be less than significant.	The existing distribution line would remain in place, and existing access roads would continue to be used. The no action alternative would result in no additional impacts to established wilderness and recreation resources in the project area over current conditions.

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3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

3.1 AIR QUALITY

3.1.1 Affected Environment

The project is within the jurisdiction of the North Coast Unified Air Quality Management District (NCUAQMD), which includes Del Norte, Humboldt, and Trinity Counties. The NCUAQMD is the local agency charged with controlling air pollution and attaining air quality standards. It is responsible for administering the California Clean Air Act of 1988 (CCAA) and Federal Clean Air Act (CAA) via guidelines set forth by State and Federal agencies.

The project is also located within a geographic area referred to as the North Coast Air Basin (NCAB). The air basin unit is used for air pollution control programs. The NCAB encompasses Del Norte, Humboldt, and Trinity Counties (which together make up the NCUAQMD), in addition to Mendocino County and northern Sonoma County (each of which is part of a separate air district within the air basin). **Figure 3.1-1** presents the geographic borders of the NCUAQMD and the NCAB.

3.1.1.1 Air Quality Standards

Regulation of air quality in California is achieved through both Federal and State ambient air quality standards and emission limits for individual sources of air pollutant emissions. The Federal CAA (42 U.S.C. §§ 7401–7671, as amended) requires the EPA to establish National Ambient Air Quality Standards (NAAQS) to protect public health and welfare. NAAQS are established for “criteria” pollutants, which include ozone (O_3), carbon monoxide (CO), respirable particulate matter (PM_{10}, mean aerodynamic diameter of 10 μm or less), fine particulate matter ($PM_{2.5}$, mean aerodynamic diameter of 2.5 μm or less), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), and lead. These are presented in **table 3.1-1**, along with the California Ambient Air Quality Standards (CAAQS). The CCAA also established CAAQS for criteria pollutants and additional standards for visibility-reducing particles, sulfates, hydrogen sulfide (H_2S), and vinyl chloride. For all air pollutants, the State standards are equal to or more stringent than the National standards.

3.1.1.2 Ambient Air Quality

The NCUAQMD maintains a variety of air pollution monitoring equipment at locations around the North Coast to monitor air pollution levels. PM_{10} levels are continuously measured in Weaverville. NO_2, CO, O_3, SO_2, and various air toxics have also been monitored at various times and locations in the NCAB.

The primary sources of air pollutants in the project vicinity include automobiles, blowing dust from dirt roads and fallow fields, wood-burning stoves, open burning from backyard burns, prescribed burns, and lumber mills (TCDOT 2003). Wildfires also contribute to particulate matter and other pollutants in the air.

Table 3.1-1 California and Federal Ambient Air Quality Standards

Pollutant	Averaging Time	California Standards[a]	Federal Standards[a] Primary[b]	Federal Standards[a] Secondary[c]
Ozone (O_3)	1-hour	0.09 ppm (180 $\mu g/m^3$)	–[d]	Same as primary standard
	8-hour	0.070 ppm (137 $\mu g/m^3$)	0.08 ppm (157 $\mu g/m^3$)	
Respirable particulate matter (PM_{10})	24-hour	50 $\mu g/m^3$	150 $\mu g/m^3$	Same as primary standard
	Annual arithmetic mean	20 $\mu g/m^3$	–[e]	
Fine particulate matter ($PM_{2.5}$)	24-hour	–	35 $\mu g/m^3$ [e]	Same as primary standard
	Annual arithmetic mean	12 $\mu g/m^3$	15.0 $\mu g/m^3$	
Carbon monoxide (CO)	8-hour	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	–
	1-hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	–
Nitrogen dioxide (NO_2)	Annual arithmetic mean	0.030 ppm (56 $\mu g/m^3$) [f]	0.053 ppm (100 $\mu g/m^3$)	Same as primary standard
	1-hour	0.18 ppm (338 $\mu g/m^3$) [f]	–	
Sulfur dioxide (SO_2)	Annual arithmetic mean	–	0.030 ppm (80 $\mu g/m^3$)	–
	24-hour	0.04 ppm (105 $\mu g/m^3$)	0.14 ppm (365 $\mu g/m^3$)	–
	3-hour	–	–	0.5 ppm (1,300 $\mu g/m^3$)
	1-hour	0.25 ppm (655 $\mu g/m^3$)	–	–
Lead	30-day average	1.5 $\mu g/m^3$	–	Same as primary standard
	Calendar quarter	–	1.5 $\mu g/m^3$	
Visibility-reducing particles	8-hour	Extinction coefficient is 0.23/km. Visibility is 10 mi or more (0.07–30 mi or more for Lake Tahoe) due to particles when the relative humidity is less than 70%. Method is beta attenuation and transmittance through filter tape.	–	–
Sulfates	24-hour	25 $\mu g/m^3$	–	–
Hydrogen sulfide (H_2S)	1-hour	0.03 ppm (42 $\mu g/m^3$)	–	–
Vinyl chloride	24-hour	0.01 ppm (26 $\mu g/m^3$)	–	–

Footnotes appear on next page.

Table 3.1-1 (Cont.)

[a] Concentration is expressed first in the unit in which it was promulgated. Equivalent units given in parentheses are based on a reference temperature of 25°C and a reference pressure of 760 mmHg; ppm in this table refers to parts per million by volume.
[b] The levels of air quality necessary, with an adequate margin of safety, needed to protect public health.
[c] The levels of air quality necessary to protect the public welfare from any known or anticipated adverse effects of a pollutant.
[d] A hyphen indicates that no standard exists.
[e] Effectively on December 17, 2006, the EPA revoked the annual-average PM_{10} standard of 50 μg/m^3 and revised the 24-hour $PM_{2.5}$ standard from 65 to 35 μg/m^3.
[f] The NO_2 ambient air quality standard was amended on February 22, 2007, to lower the 1-hour standard to 0.18 ppm and establish a new annual standard of 0.030 ppm. These changes become effective after regulatory changes are submitted and approved by the Office of Administrative Law, expected later in 2007.

Sources: CARB (2007b); EPA (2007).

During the winter, PM_{10} levels in the air basin are occasionally elevated and contribute considerably to exceedance of the State annual-average PM_{10} standard. The elevated wintertime PM_{10} levels are principally a measure of dust and wood smoke emissions from wood stoves.

The PM_{10} levels decrease during the remainder of the year as wood stove use decreases (TCDOT 2003). Slash burning and wildfire smoke, construction activities, and diesel-fueled trucks are also sources of particulates in the region.

According to the California Air Resources Board (CARB 2007a), concentration levels for criteria pollutants in the most of the NCAB area are currently below the CAAQS and/or NAAQS, with one exception for PM_{10}. For the period 1995–2006, 24-hour and annual average PM_{10} levels at Weaverville in Trinity County frequently exceeded their respective CAAQS, but the 24-hour PM_{10} level exceeded the NAAQS only one time in 2006 as the result of a prolonged forest fire.

3.1.1.3 Topography

The topography of the NCUAQMD is mountainous. There is some level terrain found along the coast and in isolated mountain valleys, but in general, the entire NCUAQMD is covered in mountains that are collectively known as the Coast Range. Elevation varies from sea level to more than 9,000 ft in the Trinity Alps north of Weaverville. The mountain ranges generally run north to south, divided by deep canyons cut by the many rivers in this area.

3.1.1.4 Climatology and Meteorology

The weather in the NCUAQMD is influenced by its distance from the ocean and elevation. The coastal areas have cool summers with frequent fog and mild winters with plentiful rain. Inland, there are very hot, dry summers and cold, snowy winters. At higher inland elevations, there are cooler summers and more snow during winter. At coastal areas, ocean influences cause moderate temperatures year-round. Some portions of the NCUAQMD have some of the highest rainfall totals found in the continental United States; more than 60 in. in some years, occurring almost entirely during the winter rainy season.

Dominant winds also exhibit a seasonal pattern on the North Coast, particularly in coastal areas. During the summer, strong north to northwesterly winds are common. In the winter, storms from the south Pacific increase the percentage of days that winds are from southerly quadrants. In the river canyons that empty into the Pacific, a diurnal pattern in wind direction is often present. In the morning hours, cool air from higher elevations flows down the valleys, while later in the day, as the lower elevation air heats up, this pattern is reversed, and air flow heads up the canyon. These air flows can be strong. Offshore and onshore flows also are common along the coast and are associated with pressure systems in the area. Onshore flows frequently bring foggy, cool weather to the coast, while offshore flows often blow fog away from the coast, resulting in sunny, warm days.

Temperature inversions are a common occurrence in the project vicinity. An inversion occurs when warm air overlies cooler air under stable atmospheric conditions. This can prevent the upward dispersion of pollutants and plays a significant role in the degree of impact that air pollution sources have. Radiation inversions, which are the most common type of inversion in the project vicinity, occur when the surface layer of air is cooled. This takes place at night on an almost daily basis, although it is more prominent from late fall through early spring, when there is less sunshine and heating from the sun. In the wintertime, a radiation inversion may persist until noon and may not be broken for several days (TCDOT 2003). In addition, a station located in a valley typically experiences nocturnal drainage flow of denser cold air at higher elevations flowing into the valley floor. More frequent occurrences of low wind speeds and calm conditions are therefore measured at this station.

The rugged terrain of Trinity County influences the climate. The patterns of mountains and hills contribute to the wide variations of localized winds, temperatures, and rainfall that occur throughout the region. Although the climate of Trinity County varies considerably with elevation, it is generally characterized by warm, dry summers and cold, moderately wet winters. Currently, no routine surface wind data are collected in Trinity County, where wind patterns are profoundly influenced by the mountains and their orientation in the area. For reference, prevailing wind directions at Redding, which is the nearest measurement site with the general north-south orientation of the major mountain chains, are from the north, and the average wind speed was about 6.4 miles per hour (mph), according to the Western Regional Climate Center (WRCC 2007).

The historic (1971–2000) annual-average temperature at Weaverville in Trinity County is about 54°F (WRCC 2007). As shown in **table 3.1-2**, low temperatures in January average 27°F, while high temperatures in July average 94°F.

The Trinity Alps to the north and west act as an effective rain shadow, reducing the moisture content of storms moving over the continent from the Pacific Ocean. Annual precipitation averages 37 in. and annual snowfall in the area is about 18 in. Most of the precipitation occurs during the winter. Summer precipitation is usually limited to occasional scattered thunderstorms. No severe weather events such as hurricanes and tornadoes, occur in the NCAB, including Trinity County, as a result of the cold ocean current in northern California and the rugged topography, respectively, according to the National Climatic Data Center (NCDC 2007).

Table 3.1-2 Climate Data Summary for Weaverville Ranger Station, California (049490)[a]

Condition	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average max. temperature (°F)	46.5	53.4	59.0	66.6	76.2	84.7	93.9	92.7	87.0	74.6	56.3	46.1	69.7
Average min. temperature (°F)	27.3	29.2	30.9	33.6	39.9	45.3	49.6	48.0	42.4	35.3	32.9	29.2	37.0
Average total precipitation (in.)	7.25	5.70	3.89	2.18	1.35	0.70	0.18	0.34	0.77	2.27	5.18	7.29	37.08
Average total snowfall (in.)	7.4	2.8	1.9	0.2	0.0	0.0	0.0	0.0	0.0	0.0	1.3	4.3	17.8
Average snow depth (in.)	1	0	0	0	0	0	0	0	0	0	0	0	0

[a] Percent of possible observations for period of record (July 1, 1948 to October 31, 2006): max. temp. is 90.4%; min. temp. is 90.5%; precipitation is 93.2%; snowfall is 93.5%; snow depth is 89.8%.

Source: WRCC (2006).

3.1.1.5 Resource Study Area

The project area is located within the NCAB and is within the jurisdiction of the NCUAQMD. The NCUAQMD occupies 7,767 mi^2, which is approximately 5% of the total area of California. It is bordered on the west by the Pacific Ocean, on the north by Oregon, and on the south by the Mendocino County line. The width varies between 30 to 100 mi inland (TCDOT 2003).

3.1.1.6 Issues of Environmental Concern

Construction and future maintenance of the project would cause air pollutants to be emitted in the form of exhaust emissions from on-highway vehicles (pickup trucks, trucks delivering new poles), off-highway vehicles (OHVs), helicopters (for removal of merchantable logs and delivery of new poles in areas of steep terrain), hand-held gas-powered tools, fugitive dust, and smoke from prescribed burning.

Clearing for the power poles, ROW, and construction of access roads would generate small amounts of air emissions from gas-powered hand-held power tools, mobile construction equipment, helicopters (for log removal), and vehicles. Fugitive dust normally generated by construction activities would be present but limited because ground vegetation, such as grasses and shrubs, would be left in place to the extent possible.

Naturally occurring asbestos-containing rocks are not expected to be in the project area, but if they are, and if they are broken or crushed as part of construction activities, the asbestos could become airborne and impact individuals nearby. Chrysotile and amphibole asbestos (such as tremolite) occur naturally in certain geologic settings in California, most commonly in association with ultramafic rocks and along associated faults. Asbestos is a known carcinogen, and inhalation of asbestos may result in the development of lung cancer or mesothelioma.

Slash would need to be treated to reduce the amount of fuel available for forest fires. The following activities would create slash:

1. Clearing access roads and spurs of brush and trees for access to the corridor.

2. Clearing space for pole sites (area per pole: 5 ft by 5 ft).

3. Trimming brush in some areas to allow for the laying out of lead lines and sock lines for conductor installation (otherwise, shrubs and brush would not be disturbed).

4. Cutting and removing trees taller than 10 ft in height in the ROW (approximately 3.3 to 4 mi of ROW on USFS land). Commercial size trees would be cut to a maximum 12-in. stump; logs would be removed by truck or helicopter (whole tree or limbed to 3-in. top). Noncommercial trees would be treated as slash. (The minimum commercial timber specifications are 8 in. diameter breast height [DPM]; 6 in. in diameter inside bark at small end.)

5. Cutting down “danger trees” outside of the ROW.

6. Cutting down old cedar utility poles.

Noncommercial trees would be bucked up and added to the slash piles on site. All slash would be removed from the project site or chipped and spread with landowner approved. No slash burning would be done.

3.1.1.7 Characterization

On the basis of ambient air monitoring in the NCAB, the NCUAQMD has been found to meet the NAAQS and CAAQS for most of the criteria pollutants and is designated as being in attainment for them (**table 3.1-3**). The designation “unclassified” means that not enough monitoring data were collected to formally qualify for an attainment or nonattainment designation, but the area is considered to be in attainment. The standard currently listed as nonattainment on the North Coast is the State standard for PM_{10}, a status that this region shares with most of California. The North Coast is listed as being in attainment for the Federal PM_{10} standard, which is not as stringent as the level set by California. In addition, northern Sonoma County is classified as a nonattainment area for O_3.

The project area meets the NAAQS (i.e., classified as attainment) and is thus subject to the Prevention of Significant Deterioration (PSD) regulations (40 CFR 52.21). The PSD regulations, which are designed to limit the growth of air pollution in “clean” areas, apply to a new major stationary source or to the modification of an existing major stationary source located in an attainment or unclassified area. PSD regulations limit the amount of additional air pollution above legally established baseline levels for NO_2, SO_2, and PM_{10}, as shown in **table 3.1-4**. Incremental increases in PSD Class I areas (e.g., National Parks or Wilderness Areas) are strictly limited, while those in Class II areas (e.g., most of non-Class I areas) allow for moderate emission growth. In effect, the PSD increments, when added to baseline concentrations, represent new ambient air quality standards for the PSD areas. The PSD Class I areas located within 50 mi of the project area are Yolla-Bolly-Middle-Eel Wilderness Area and Marble Mountain Wilderness Area, which are located about 36 mi south-southwest of and 47 mi north-northwest of the project area, respectively.

Table 3.1-3 North Coast Air Basin Attainment Designations as of August 24, 2006

Pollutant	State	Federal
Ozone (O_3)	Attainment/ Nonattainment (Sonoma County)	Unclassified/Attainment
PM_{10}	Nonattainment (Attainment for Sonoma County)	Unclassified
$PM_{2.5}$	Unclassified	Unclassified/Attainment
Carbon monoxide (CO)	Unclassified/Attainment	Unclassified/Attainment
Nitrogen dioxide (NO_2)	Attainment	Unclassified/Attainment
Sulfur dioxide (SO_2)	Attainment	Unclassified
Lead	Attainment	Unclassified/Attainment
Visibility-reducing particles	Unclassified	–[a]
Sulfates	Attainment	–
Hydrogen sulfide (H_2S)	Unclassified/Attainment	–
Vinyl chloride	Not available	–

[a] A hyphen indicates that no standard exists.

Sources: CARB (2007c); 40 CFR 81.305.

Table 3.1-4 Maximum Allowable PSD Increments for PSD Class I and Class II Areas

		Allowable Concentration Increment (µg/m)		
PSD Class	Pollutant	Annual Arithmetic Mean	24-Hour Maximum	3-Hour Maximum
I	NO_2	2.5	–[a]	–
	SO_2	2	5	25
	PM_{10}	4	8	–
II	NO_2	25	–	–
	SO_2	20	91	512
	PM_{10}	17	30	–

[a] A hyphen indicates no increment exists.

Source: 40 CFR 50.21.

3.1.2 Environmental Consequences

3.1.2.1 Standards of Significance

The proposed action and alternatives would have significant, adverse effects on air quality if they:

- Violated ambient air quality or emissions standards applicable to the study area;
- Exposed sensitive receptors to detrimental pollution concentrations;
- Contributed to a collective or combined air quality effect with foreseeable other projects that led to violation of air quality standards;

- Produced air pollutant levels above the level that causes significant cancer risk, (the State of California defines the level of significant cancer risk as more than 10 confirmed cases per one million individuals exposed); or

- Conflicted with adopted environmental plans and goals as provided in the State Implementation Plan (SIP) or regional air quality plan.

NCUAQMD also defines significant impacts from a proposed action as "the potential of a new or modified stationary source to emit air contaminants that would equal or exceed any of the following rates in tons per year" (see **table 3.1-5**).

Notwithstanding the above significant emission rates for various air contaminants, NCUAQMD also considers any net emission increase from any new or modified stationary source that would be constructed within 10 km of a Class I area and have an air quality impact on such area equal to or greater than 1 $\mu m/m^3$ (24-hour average) [40 CFR 52.21(b)(23)(iii)] as significant.

Even though the proposed action would not be a major stationary source of air emissions, NCUAQMD uses these criteria when evaluating whether any project would have significant adverse impacts on ambient air quality.

Table 3.1-5 NCUAQMD Air Emission Thresholds of Significance

Contaminant	Emission Rate (tons/yr))
Carbon monoxide (CO)	100
Nitrogen oxides (NO_x)	40
Sulfur dioxide (SO_2)	40
Particulate matter	25
PM_{10}	15
Ozone (O_3)	40 (as VOC)
Lead	0.6
Asbestos	0.007
Beryllium	0.0004
Mercury	0.1
Vinyl chloride	1
Fluorides	3
Sulfuric acid mist	7
Hydrogen sulfide (H_2S)	10
Total reduced sulfur (including H_2S)	10
Reduced sulfur compounds (including H_2S)	10

3.1.2.2 Environmental Protection Measures

Clearing, Access Road, Transmission Line, and Weaverville Switchyard Construction and Maintenance Activities

During these activities, EPMs would include the following:

- Vehicles and equipment used to constructs and maintain the proposed action or alternatives would be appropriately permitted and be equipped with appropriate emissions control equipment that would be maintained.

- Exhaust emissions from all off-road equipment would not exceed 40% opacity for more than 3 minutes in any 1-hour period.

- Equipment and vehicles that had excessive exhaust gas emissions because of poor engine adjustments or other inefficient operating conditions would not be operated until corrective repairs or adjustments were made.

- Removal of low-growing vegetation and ground disturbance would be limited to the minimum necessary to complete ROW requirements. Low-growing vegetative cover would be maintained on all other portions of the project area.

- Road construction would include dust-control measures, such as watering and using other approved suppressing agents for limiting dust generation during construction.

Airborne Asbestos

As presented in **figure 3.1-2**, the project area does not likely contain natural occurrences of asbestos (CDC 2000). Project construction activities would not be expected to result in emissions of asbestos. However, in accordance with applicable provisions of title 17 of the California Code of Regulations, Section 93105, “The Asbestos ATCM [Airborne Toxic Control Measure] for Construction, Grading, Quarrying and Surface Mining Operations,” if it was determined that naturally occurring asbestos, serpentine, or ultramafic rock was present, the construction contractor would need to comply with the requirements of the ATCM.

Slash Treatment

Slash may be treated in a number of ways to minimize its impact on the environment and potential for fire hazard. For the proposed action, slash would be removed from the project site or lopped or chipped and spread with landowner approval. No slash burning is planned. However, burning might be necessary as a contingency. In such an event, impacts from smoke would be limited through a permitting process, as discussed in section 3.1.2.3. Mechanical treatment (lopping or chipping) would result in minor amounts of gaseous emissions from fuel-fired portable and mobile equipment.

Diesel Emissions

There are currently no plans to employ portable diesel engines, which can emit criteria pollutants and diesel particulate matter (DPM; considered to be a toxic air contaminant). However, any portable engines (i.e., not self-propelled) that might be needed for the project would be registered under the State portable equipment registration program (PERP) or have a permit issued by the NCUAQMD.

3.1.2.3 Impacts from the Proposed Action

The proposed action involves removing an existing distribution line (i.e., Segment 1) and replacing it with a longer transmission line, constructing a new transmission line (Segments 2 and 3), and constructing a new switchyard. Potential air impacts from these activities would come from vehicle/equipment emissions during logging, pole removal and placement, conductor stringing, grading, site clearing, vegetation management, road construction, dust from traffic, digging and filling, and concrete operations, if necessary.

Project impacts to air quality would occur only during construction and periodic maintenance of the ROW and access roads and would thus be short-term. The nature of the clearing, access road construction, and maintenance activities sources and their air emissions were discussed with NCUAQMD (Davis 2006). Upon consultation, NCUAQMD determined that (a) because of the nature and small quantity of sources (i.e., 6 to 10 each of chain saws, OHVs, and pickup trucks; an occasional removal/delivery truck for poles; and occasional removal/delivery by helicopter), the increase in air emissions after applying the EPMs discussed in section 3.1.2.2 would be well below the significance thresholds presented in **table 3.1-5,** and (b) no detailed quantification would be necessary. Therefore, resulting air emissions would not pose the potential for a significant adverse impact, as listed in section 3.1.2.1.

Because the project area is not in an area considered to be likely to contain natural occurrences of asbestos, it is expected that project construction activities would not result in emissions of asbestos and that no significant adverse impact would occur.

While slash burning is not planned, project delays might make it a necessary contingency. Before slash burning could proceed, for any prescribed burning greater than 10 acres or estimated to produce more than 1 ton of particulate matter, the STNF Trinity River Management Unit (TRMU) would have to submit a smoke management plan/burn registration application to NCUAQMD for approval. After the application was approved, the NCUAQMD would issue a valid burn permit; however, the TRMU would have to contact NCUAQMD the day before a planned burn for approval of that day’s burn. NCUAQMD would approve the burn if it concluded that the burn would not cause any exceedences of air quality standards or smoke impacts on smoke-sensitive areas. Brush might be piled for burning in areas where there were dense concentrations of brush damaged from tree felling.

No diesel-fired sources are planned. However, if any of such sources would be needed, they would be registered under the PERP or have a permit issued by NCUAQMD. These requirements would ensure that there would be no significant adverse health impacts from diesel exhaust emissions.

Although the area is classified as being in attainment (by Federal designation), PSD regulations would not be applicable to the proposed action because it is a nonmajor stationary source. In addition, general conformity, which applies only if the Federal action is taking place in a nonattainment or maintenance area, would also not be applicable to the proposed action.

3.1.2.4 Impacts from the No Action Alternative

The ROW would not be increased and new transmission lines would not be constructed under the no action alternative. Therefore, air emissions would not be increased as a result of the no action alternative, and there would be no significant impacts to air quality.

3.2 BIOLOGICAL RESOURCES

3.2.1 Affected Environment

This section describes the existing biological resources within the project area, identifies impacts to biological resources associated with the proposed action and the no action alternatives, and presents mitigation measures that would serve to offset such impacts. The analysis consisted of a review of documents, databases, and reports in conjunction with biological field surveys to determine the impacts, if any, to vegetation, wildlife, fisheries, and special-status species and habitats in the project area.

Agency consultation consisted of contacting the USFS, BLM, and California Native Plant Society (CNPS) and consulting the California Department of Fish and Game's (CDFG's) California Natural Diversity Database (CNDDB) regarding the sensitive wildlife, fish, and plant species and their habitats that might occur in the project area. The USFWS and NMFS lists of endangered, threatened, proposed, and candidate species occurring in Trinity County, California, were also obtained. The purpose of these consultations, meetings, and associated correspondence was to help identify biological issues, study area boundaries, and the distributions of plants and wildlife and their habitats and to help develop survey and mapping protocols for preparing ecological studies for the project corridor.

Available literature regarding the range and habitat characteristics of these species was also reviewed. It included but was not limited to USFWS and NMFS species reports, *Federal Register* documents, and the STNF LRMP (USFS 1995).

Qualified biologists conducted a pedestrian survey of the proposed transmission line route on June 21 through 24, 2005. The biologists surveyed the ROW in pairs. In order to conduct a comprehensive survey of the transmission line route, each biologist covered a 100-ft-wide transect (50 ft from the center line and 50 ft from the outer boundary of the 200-ft-wide survey corridor). Signs of sensitive species and incidental observations of sensitive or other wildlife species were recorded. The biological resources in the project area were mapped by collecting global positioning system (GPS) points, referencing staked pole locations encountered, drawing paper maps, and later digitizing the data points. In addition, a field survey of the proposed access roads located outside the previously surveyed ROW was conducted from June 7 through June 9, 2006. The survey included roads identified as being existing access roads needing work or as new construction access roads. Sensitive plant surveys were conducted between June 23 and July 21, 2006, by qualified botanists, and Survey and Manage Species surveys were completed between May 1 and August 6, 2006, along proposed ROW segments. Protocol surveys for the northern spotted owl in the vicinity of the existing and proposed transmission line were conducted in June, July, and August 2006 and in May 2007.

3.2.1.1 Characterization of the Project Area

The project area for biological resources is defined as the transmission line ROW and nearby habitat from the Trinity Power Plant substation to the proposed new Weaverville Switchyard, with an additional 1.3-mi buffer defined for the northern spotted owl. The project was divided into three segments (see chapter 2).

The project area is located within a portion of the STNF in the central part of Northern California between the interior Coast Range on the west and the Cascade Range on the east. Topography consists of rolling to steep mountainous landscapes with narrow valleys. Elevations in the project area range from 1,600 to 3,600 ft above mean sea level (msl). Generally, soils are deep and well-drained, with moderate to high runoff and permeability. The land uses along the proposed transmission line include industrial/commercial, recreational, and timber production. Industrial and commercial land uses include roads, railroads, and existing ROWs. There are several recreational opportunities within and near the project area, including hunting, fishing, wildlife observation, and hiking. In addition to land administered by the USFS, the project area crosses land administered by the BLM as well as land owned by SPI and a few private landowners (see section 3.5).

Vegetation

Vegetation communities in the project area are dominated by mixed conifer hardwood forests with smaller inclusions of montane/mixed chaparral, and montane riparian woodlands that are associated with the larger streams and the Trinity River. Approximately 4 mi of the proposed ROW, between Structures 8/12 and 12/2, is owned by SPI. Most of these lands are actively managed for timber production. In addition, developed portions of the project area (e.g., Trinity River Dam, Trinity River Fish Hatchery, and Lewiston Dam) have human-modified vegetative communities.

Mixed Conifer Hardwood Forests

Mixed conifer hardwood forests often contain a mixture of hardwoods and conifers that form a dense, bilayered canopy. The species mixture may include California black oak (*Quercus kelloggi*), big-leaf maple (*Acer macrophyllum*), and Pacific madrone (*Arbutus menziesii*), with ponderosa pine (*Pinus ponderosa*) and Douglas-fir (*Pseudotsuga menziesii*) forming the overstory. Hardwood forests may grow in pure stands or as components of some conifer stands. Typical species may include California black oak, canyon live oak (*Quercus chrysolepis*), Pacific madrone, tanbark oak (*Lithocarpus densiflora*), and big-leaf maple. Brush species in the project area include greenleaf manzanita (*Arctostaphylus patula*), whiteleaf manzanita (*A. viscida*), and buck brush (*Caenothus cunpatus*).

Montane Riparian Woodland

The montane riparian woodland grows where water runs intermittently or year-round. The most common species are alders (*Alnus* spp.), cottonwoods (*Populus* spp.), and willows (*Salix* spp.).

Chaparral

Chaparral communities are dominated by manzanita, chamise (*Adenostoma fasciculatum*), toyon, and Pacific poison oak (*Toxicodendron diversilobum*).

Noxious Weeds

Severe wildfires, activities that disturb soils, and roads and trails can facilitate the spread and establishment of noxious weeds and other undesirable plants. Noxious weed species have been introduced to the STNF, dispersing along existing roads. Non-native species have replaced native species in many areas and are especially prolific in open chaparral, oak woodlands, and near roads (USFS 2004a). Invasive plants that have been documented within the Weaverville watershed include yellow starthistle (*Centaurea solstitialis*), spotted knapweed (*C. maculosa*), lens-podded hoary cress (*Cardaria chalapensis*), scotch broom (*Cytisus scoparius*), Canada thistle (*Cirsium arvense*), and bull thistle (*C. vulgare*) (USFS 2004a). During the 2006 botanical surveys, yellow starthistle and bull thistle populations were identified along all three proposed ROW segments.

Wildlife

The vegetation communities discussed above serve as habitat and provide resting, feeding, breeding, and escape cover for a variety of wildlife. Some of the more common mammals in the region/project area include American black bear (*Ursus americanus*), mule deer (*Odocoileus hemionus*), ringtail (*Bassariscus astutus*), raccoon (*Procyon lotor*), striped skunk (*Mephitis mephitis*), mountain lion (*Felis concolor*), bobcat (*Lynx rufus*), coyote (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*), western gray squirrel (*Sciurus griseus*), Douglas squirrel (*Tamiasciurus douglasi*), northern flying squirrel (*Glaucomys sabrinus*), chipmunks (*Eutamias* spp.), golden-mantled ground squirrel (*Spermophilus lateralis*), bushy-tailed wood rat (*Neotoma cinerea*), and black-tailed jackrabbit (*Lepus californicus*).

The forest habitats of the project area support both generalist and specialist species of birds. In general, bird diversity increases in the project area during the spring and fall when neotropical migrants pass through the general area in route to summer breeding or wintering grounds. Common passerine forest species that may occur within the project area include winter wren (*Troglodytes troglodytes*), western flycatcher (*Empidonax difficilis*), chestnut-backed chickadee (*Poecile rufescens*), hermit warbler (*Dendroica occidentalis*), golden-crowned kinglet (*Regulus satrapa),* Wilson's warbler (*Wilsonia pusilla*), brown creeper (*Certhia americana*), and varied thrush (*Ixoreus naevius*). Other species may include bald eagle (*Haliaeetus leucocephalus*), northern spotted owl, Stellar's jay (*Cyanocitta stelleri*), scrub jay (*Aphelocoma californica*), acorn woodpecker (*Melanerpes formicivorus*), downy woodpecker (*Picoides pubescens*), hairy woodpecker (*P. villosus*), Nuttall's woodpecker (*P. nuttallii*), pileated woodpecker (*Dryocopus pileatus*), black-capped chickadee (*Poecile atricapilla*), mountain chickadee (*P. gambeli*), and western tanager (*Piranga ludoviciana*).

Bird species that occupy riparian habitats that were observed in the spring and summer of 2006 included black-headed grosbeak (*Pheucticus melanocephalus*), tree swallow (*Tachycineta bicolor*), western wood-pewee (*Contopus sordidulus*), Wilson's warbler (*Wilsonia pusilla*), yellow warbler (*Dendroica petechia*), and yellow-breasted chat (*Icteria virens*). Those that inhabit openings and early seral stages included American crow (*Corvus brachyrhynchos*), American robin (*Turdus migratorius*), bushtit (*Psaltriparus minimus*), California quail (*Callipepla californica*), common raven (*Corvus corax*), dark-eyed junco (*Junco hyemalis*), lazuli bunting (*Passerina amoena*), mourning dove (*Zenaida macroura*), red-tailed hawk (*Buteo* *jamaicensis*), song sparrow (*Melospiza melodia*), turkey vulture (*Cathartes aura*), and western kingbird (*Tyrannus verticalis*). Birds associated with aquatic habitats included great blue heron (*Ardea herodias*), Canada goose (*Branta canadensis*), cinnamon teal (*Anas cyanoptera*), common merganser (*Mergus merganser*), great egret (*Ardea alba*), mallard (*Anas platyrhynchos*), and wood duck (*Aix sponsa*) (Rogers 2006).

Some of the more common reptiles in the region include northern alligator lizard (*Elgaria coerulea*), western fence lizard (*Sceloporus occidentalis*), northwestern gartersnake (*Thamnophis ordinoides*), racer (*Coluber constrictor*), gophersnake (*Pituophis catenifer*), and western rattlesnake (*Crotalus oreganus*). Several species of amphibians may occur in the region, including the Pacific giant salamander (*Dicamptodon tenebrosus*), northwestern salamander (*Ambystoma gracile*), Dunn's salamander (*Plethodon dunni*), ensatina (*Ensatina eschscholtzii*), roughskin newt (*Taricha granulosa*), and Pacific chorus frog (*Pseudacris regilla*).

Fisheries

The upper Trinity River watershed provides habitat for several species of fish. These include fall-run Chinook salmon (*Oncorhynchus tshawytscha*), coho salmon (*O. kisutch*), winter-run steelhead (anadromous form of rainbow trout; *O. mykiss*), Pacific lamprey (*Lampetra tridentata*), brown trout (*Salmo trutta*), speckled dace (*Rhinichthys osculus*), marbled sculpin (*Cottus klamathensis*), threespine stickleback (*Gasterosteus aculeatus*), Klamath smallscale sucker (*Catostomus rimiculus*), and Klamath lamprey (*Lampetra similis*). Fisheries management in this watershed is focused on the anadromous fish species. The habitats and fisheries of the major streams in the area are described below.

The Trinity River is a major tributary to the Lower Klamath River. Both the Klamath and Trinity Rivers previously supported an anadromous fishery (e.g., fish that live to adulthood in saltwater and return to fresh water to breed). However, dams, diversions, hydroelectric projects, past mining, timber production, and road building have contributed to sedimentation, reduced flows, degraded water quality, and/or barriers to passage, which have reduced the ability of anadromous fish species to move between saltwater and fresh water habitats.

Anadromous fish have access to approximately 9.5 mi of Rush Creek before a steep bedrock fall blocks passage (USFS 2004a). Chinook salmon are found only during years of early fall rain that creates suitable migration conditions. Low fall flows generally prevent anadromous fishes from using Rush Creek until late November (USFS 2004a). Accessible segments of Rush Creek contain designated critical habitat for coho salmon. Spawning survey counts that have been conducted intermittently since 1964 have varied from 0 to 1 for Chinook salmon, 0 to 32 for coho salmon, and 5 to 439 for steelhead (USFS 2004a).

Little Browns Creek has approximately 0.9 mi of habitat accessible to anadromous fishes on STNF lands (USFS 2004a). Culverts on CR 232 present a complete barrier to migrating fishes (USFS 2004a). Accessible segments of Little Browns Creek contain designated critical habitat for coho salmon. Juvenile coho salmon and steelhead have been observed in Little Browns Creek (USFS 2004a).

3.2.1.2 Key Biological Issues

Through scoping, a number of specific issues were identified for biological resources. These include impacts to federally listed, proposed, and candidate species; designated critical habitat; State, USFS, and BLM sensitive wildlife and plants; management indicator species (MIS); sensitive habitat types; noxious weed species; Survey and Manage species; and jurisdictional wetlands and waters of the United States (jurisdictional wetlands and waters of the United States are addressed in Section 3.12, Water Resources).

Endangered and Threatened Wildlife Species

The Endangered Species Act (ESA) was passed in 1973 to address the decline of fish, wildlife, and plant species in the United States. The purpose of the ESA is to conserve "the ecosystems upon which endangered and threatened species depend" and to conserve and recover listed species (16 U.S.C. § 1531 (b)). The law is administered by the USFWS. Under the law, species may be listed as either "endangered" or "threatened." The ESA defines an endangered species as any species that is in danger of extinction throughout all or a significant portion of its range (16 U.S.C. § 1532 (6)). A threatened species is one that is likely to become an endangered species within the foreseeable future throughout all or a significant part of its range (16 U.S.C. § 1532 (20)).

"Critical habitat" is defined as the specific areas within the geographic area currently occupied by a species, at the time it is listed in accordance with the ESA of 1973, as amended, on which are found those physical or biological features essential to the conservation of the species and that may require special management considerations or protection (16 U.S.C. § 1532 (5)). Either the USFWS or the NMFS may list critical habitat (16 U.S.C. § 1533). The ESA also requires consultation on actions that may modify critical habitat for threatened and endangered species (16 U.S.C. § 1536).

Table 3.2-1 lists endangered, threatened, and candidate species that may occur within the project area. On the basis of information provided by the contacted agencies and the species' range and habitat characteristics, **table 3.2-1** identifies each of these species as either (1) analyzed in this report because it may occur in the project area or (2) considered but excluded from detailed analysis because it is not expected to occur in the project area and thus would not be affected by the project. The Pacific fisher (*Martes pennanti*), bald eagle (*Haliaeetus leucocephalus*), recently delisted (USFWS 2007b), northern spotted owl, and Southern Oregon/Northern California Coast (SONCC) coho salmon Evolutionarily Significant Unit (ESU) are the only species that may occur in the project area as determined on the basis of habitats present and records of occurrence in the project area. A more detailed analysis for each of these species, their critical habitats (as applicable), and essential fish habitat (EFH) for the coho salmon is contained in the Biological Assessments (BAs) (see appendix F).

Pacific Fisher

The West Coast distinct population segment of the Pacific fisher has undergone a 12-month status review. After review of all available scientific and commercial information, the

Table 3.2-1 USFWS and NMFS Endangered, Threatened, and Candidate Species That May Occur in the Trinity PUD Project Area

Common Name	Scientific Name	Federal Status	Analysis
Birds			
Bald eagle	*Haliaeetus leucocephalus*	Threatened[a]	Resident along Trinity River corridor.
Marbled murrelet	*Brachyramphus marmoratus*	Threatened	Excluded from detailed analysis because the project area lies outside the known or expected range of this species (Ralph et al. 1995).
Northern spotted owl	*Strix occidentalis caurina*	Threatened	Resident in late successional and old growth forests. Territories were identified in 2006.
Western yellow-billed cuckoo	*Coccyzus americanus*	Candidate	Nests in open woodland, parks, deciduous riparian woodland, tall cottonwood and willow riparian woodland, deciduous woodlands, moist thickets, orchards, and overgrown pastures. Excluded from detailed analysis because areas with these habitat types are limited and disjunct in the project area.
Mammals			
Pacific fisher	*Martes pennanti pacificus*	Candidate, USFS and BLM sensitive	Resident in coniferous forests and has been sighted in the project area.
Amphibians			
California red-legged frog	*Rana aurora draytonii*	Threatened	Excluded from detailed analysis because the project area lies outside the known or expected range of this species (USFWS 2002).
Fish			
SONCC coho salmon	*Oncorhynchus kisutch*	Threatened	Occurs in Trinity River, Little Browns Creek, and Rush Creek.
Plants			
McDonald's rockcress	*Arabis macdonaldiana*	Endangered	Restricted to serpentine areas and known from 20 to 30 sites in northern California (Mendocino, Del Norte, and Siskiyou Counties) and immediately adjacent southwestern Oregon. Excluded from detailed analysis because the project area is outside the known or expected range of this species and the lack of serpentine rock in the project area.

[a] Recently delisted (USFWS 2007b).

USFWS (2004) found that the listing action is warranted but precluded by higher-priority actions.

Fishers have large home ranges, with those of males considerably larger than those of females. On the basis of a review of eight studies of fisher home range size, Freel (1991, as cited in CBD [2000]) determined that to support a reproductive unit of fishers that included the home ranges of one male and two females would require 6,000 acres in high-capability habitat (e.g., habitat with sufficient quality and quantity of forest habitat to support healthy pairs or populations of fishers) with 70 to 80% in mature, closed conifer forest; 9,800 acres in moderate-capability habitat with 61 to 80% in mature, closed conifer forest; and 11,300 acres in low-capability habitat with 50 to 60% in mature, closed conifer forest. Similarly, average home ranges in northern California were 6,228 acres for males and 1,538 acres for females (Zielinski et al. 1995 as cited in CBD 2000).

Two incidental sightings of the Pacific fisher were documented during the 2006 northern spotted owl surveys (**figure 3.2-1**).

Bald Eagle

The bald eagle was listed as endangered in 1967. It was reclassified as threatened in 1995 after a steady increase in its population size and range, and a proposal for the delisting was initiated in 1999. On June 28, 2007, it was announced that the bald eagle was to be removed from the list of threatened and endangered species. The removal will become effective 30 days after publication of the delisting in the *Federal Register* (USFWS 2007b). Following delisting, the bald eagle will be monitored by the USFWS in cooperation with the States for a minimum of five years (USFWS 2007c). After delisting, the bald eagle will still be protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act. The bald eagle winters throughout most of California near lakes, reservoirs, river systems, rangelands, and coastal wetlands. The breeding range is mainly forested habitats near reservoirs and rivers. Within the STNF, mature, open pine and mixed conifer forests are preferred habitat for nesting bald eagles. Dense and moderately dense forests of mature pine and mixed conifer also provide suitable nesting habitat. Most bald eagles nesting on the STNF are at Shasta and Trinity Lakes. Suitable habitat also exists at other water sources, including the Trinity River (USFS 1995). The distance to the food supply (cold and warm water fish and/or waterfowl) from the nest is generally less than 0.5 mi and is suitable if located within 1 mi (USFS 1995).

Habitat for wintering bald eagles in the STNF includes pine, mixed conifer, fir, and oak forests. Roost trees are typically located in dense stands of conifer but may also be in open stands of conifer, oaks, or large juniper. The distance to the food supply from the roost tree is preferably less than 10 mi but is suitable if located within 12 mi (USFS 1995).

Historical data indicate two known bald eagle nesting territories near the project area in the vicinity of the Trinity Dam and the Lewiston Dam. No bald eagle nests were observed within the project area. However, one bald eagle adult was observed in a large Douglas fir near Pole 7/7 of the ROW, and a juvenile was observed in a tree along the Trinity River just downstream of the fish hatchery.

Northern Spotted Owl

The northern spotted owl was listed as a threatened species in 1990. In 1994, the Northwest Forest Plan became the cornerstone for conserving the northern spotted owl on 24.4 million acres of Federal land in Oregon, Washington, and California. In 2004, the USFWS completed a 5-year review of the status of the northern spotted owl. The USFWS concluded that the species continues to warrant the protection of the ESA as a threatened species. Although timber production rates have greatly declined on Federal lands, the rangewide population of the northern spotted owl has continued to decline (Noon and Blakesley 2006). The reasons for the continual decline possibly include habitat loss and fragmentation due to fires, timber harvests on private and Federal lands, competitive displacement by barred owls (*Strix varia*), advancing forest succession toward a climax fir community in the absence of fire, and changing weather patterns (Anthony et al. 2006; Noon and Blakesley 2006). In 2006, a recovery team was assembled, and a draft recovery plan was published in 2007 (USFWS 2007a). Recovery, which will take at least 30 years, will require successful management of the barred owl and development and maintenance of sufficient habitat (USFWS 2007a).

The northern spotted owl is found throughout much of northern California in dense old-growth, multilayered, mixed conifer, redwood, and Douglas-fir habitats, from sea level up to approximately 7,600 ft. Forested areas with greater that 70% canopy closure provide suitable northern spotted owl nesting and roosting areas, while areas with greater than 40% canopy closure provide foraging habitat. Old growth forests provide the best habitat conditions. The northern spotted owl home range and territory represent a 1.3-mi (3,340-acre) buffer and a 0.7-mi (984-acre) buffer, respectively, around a known owl activity center (USFS 2006a).

Northern spotted owl surveys were conducted by the USFS by using the *Protocol for Surveying Proposed Management Activities That May Impact Northern Spotted Owls* (USFWS 1992a). For this project survey, a 1-year, six-visit protocol in 2006, with an additional three-visit survey in 2007 was agreed upon by the USFWS. Figure 3.2-1 shows the locations of current (2006 and 2007) northern spotted owl nest sites in the vicinity of the project area. The ROW transects the home range buffer for three of the four current nesting sites.

In 1992, critical habitat was designated to further protect the owl on Federal lands (USFWS 1992b). The USFWS designated 6.9 million acres of northern spotted owl critical habitat, of which 20%, or 1,409,000 acres (1,301,000 acres USFS and 108,000 acres BLM) is located in California (50 CFR part 17). The project would traverse approximately 3.8 linear mi (35.4 acres) of designated critical habitat for the northern spotted owl (**figure 3.2-2**).

Coho Salmon

The coho salmon in the project area are part of the SONCC ESU. An ESU is a population that (1) is substantially reproductively isolated from conspecifics populations, and (2) represents an important component in the evolutionary legacy of the species (Good et al. 2005). The SONCC ESU was listed as threatened by the NMFS under the ESA in 1997 (NMFS 1997). It encompasses coastal drainages between Cape Blanco in southern Oregon and Punta Gorda in northern California. Although only a limited amount of data were available to assess population numbers or trends in the ESU, NMFS determined that all coho salmon stocks within these coastal drainages were depressed relative to their past abundance and concluded that coho salmon in this ESU were threatened. Drought; floods; poor ocean conditions; habitat degradation, water diversions; dams; harvest, grazing, and wetland losses; mining; roads; and artificial propagation were the major threats that led to the designation of the SONCC ESU as threatened (NMFS 1997).

Populations of coho salmon are present on the STNF in the watersheds of the Klamath and Trinity Rivers. Coho salmon stocks in these rivers are highly influenced by hatcheries. Little natural reproduction occurs in the mainstream reaches. Coho salmon abundance is estimated at <30,000 natural reproducing individuals, with about 20,000 coho salmon being of hatchery origin (NMFS 1999). Within the project area, coho salmon are known to inhabit the Trinity River and Weaver Creek drainage, including Little Browns Creek. They occur sporadically in response to favorable tributary migration conditions. Coho salmon also occur in Rush Creek.

Designated critical habitat for the SONCC ESU includes all river reaches accessible between Cape Blanco, Oregon, and Punta Gorda, California (NMFS 1999). Accessible reaches are those within the historical range of the ESU that can still be occupied by any life stage of coho salmon. Inaccessible reaches are defined as those above Lewiston Dam (Lewiston Reservoir) or above longstanding, naturally impassable barriers (e.g., natural waterfalls in existence for at least several hundred years). Critical habitat, which encompasses the project area, consists of the water, substrate, and adjacent riparian zone of estuarine and riverine reaches (including off-channel habitats) in the South Fork Trinity and Trinity hydrologic units within Humboldt and Trinity Counties.

The project would cross critical habitat for the coho salmon, including segments of the Trinity River, Little Browns Creek, and Rush Creek. In addition, EFH has been designated for coho salmon and Chinook salmon. EFH is defined as those waters and substrates required by commercially important fish species (including the various Pacific salmon species) for spawning, breeding, feeding, and growth to maturity. The EFH for coho and Chinook salmon is identical to designated coho critical habitat in the project area (USFS 2006a).

Sensitive and Special-Status Species

The USFS Sensitive Species Program was developed to meet applicable obligations under the ESA, the National Forest Management Act (NFMA), national policy direction as stated in the USFS Manual, Chapter 26 (Threatened, Endangered and Sensitive Plants and Animals), and U.S. Department of Agriculture (USDA) Regulation 9500-4 (Fish and Wildlife Policy). The Sensitive Species Program is a proactive approach to conserving species to prevent a trend toward listing under the ESA, assists in providing for a diversity of plant and animal communities [16 U.S.C. § 1604(g) (3) (B)] as part of the USFS multiple use mandate, and helps in maintaining "viable populations of existing native and desired non-native species in the planning area" as required by NFMA (36 CFR 219.19).

Appendix C lists the USFS Region 5 sensitive and endemic species that may occur in the STNF and BLM special-status species (these include Federal endangered, threatened, proposed, and candidate species), State listed species, and additional BLM sensitive species.

Sensitive Wildlife Species

Of the species that are listed as sensitive and special-status by the USFS and BLM (appendix C), three species — Pacific fisher, northern goshawk (*Accipiter gentilis*), and foothill yellow-legged frog (*Rana boylii*) — may occur in the project area. The Pacific fisher was discussed previously as a federally listed candidate species. A supporting analysis is summarized below for the northern goshawk and foothill yellow-legged frog.

Northern Goshawk

The northern goshawk is designated as a sensitive species by USFS Region 5 and has been selected as a representative species of the late seral stage wildlife assemblage in the STNF (USFS 1995). The distribution of the northern goshawk is widespread in the northern and western United States. This species inhabits dense, mature, and old-growth coniferous and deciduous forests. It nests in large live trees, usually in the densest parts of stands but close to openings. Nesting habitat requires proximity to a water source.

This species can be found throughout the STNF in most conifer timber types. However, late-successional Douglas fir, ponderosa pine, mixed conifer, Jeffrey pine (*Pinus jeffreyi*), and California red fir (*Abies magnifica*) are preferred habitats (USFS 1995).

The CNDDB identified a historical northern goshawk nest near Segment 1 of the project.

Foothill Yellow-Legged Frog

The foothill yellow-legged frog is one of a few California amphibian species whose complete life cycle is associated with stream environments. It prefers partially shaded, small to large perennial streams with cobbles. The frog will also inhabit intermittent streams with seasonal riffles. It breeds in pools of streams, with eggs usually attached to gravel or rocks at the edge of the pool (NatureServe 2007). Breeding generally occurs following the period of high winter flow discharge (e.g., between late March and early June) (Jennings and Hayes 1994).

In the Trinity River, the foothill yellow-legged frog is rare near Lewiston Dam and is clustered within limited areas of suitable habitat in river areas downstream of the dam (Ashton et al. 1997).

Sensitive Plant Species

Sensitive plant species are not officially listed as endangered or threatened by the State of California or the Federal ESA but warrant consideration and protection because of their limited distribution, scarcity of individuals, or likelihood of becoming listed as endangered or threatened. The plant characteristics, habitat, and known occurrence of the USFS and BLM sensitive and special-status plants that are either documented within or could occur in the project area are described in appendix C.

Sensitive Fungi Species

Field surveys were not performed to verify the presence of sensitive fungi species. Therefore, suitable habitat may be present within the project area for branched collybia (*Collybia racemosa*), *Cudonia monticola* (no common name), olive phaeocollybia (*Phaeocollybia olivacea*), and stalked orange-peel fungus (*Sowerbyella rhenana*). Specific habitat requirements for the four fungi species include the following.

- Olive phaeocollybia requires an oak or pine host tree;
- Branched collybia (mycoparasite) requires the presence of another fungi species, and this is provided in organic debris;
- *Cudonia monticola* (saprophyte and decomposer) requires decaying, coarse, woody debris; and
- Orange-peel fungus (saprophyte and decomposer) requires decaying litter.

Sensitive Fish Species

The following USFS sensitive fish species may occur within the Trinity River or other fish-bearing streams in the project area:

- Upper Klamath/Trinity Chinook (UKTR) ESU-spring run (*Oncorhynchus tshawytscha*),
- Upper Trinity River Chinook (UTR) ESU-fall run (*O. tshawytscha*), and
- Klamath Mountain Province steelhead (KMP) ESU (*O. mykiss*).

The McCloud River redband trout (*O. mykiss stonei*), rough sculpin (*Cottus asperrimus*), and hardhead (*Mylopharodon conocephalus*) do not occur in the project area and would not be affected by activities occurring within the defined project area; therefore, they are not addressed further in this EIS.

Management Indicator Assemblages and Species

To reduce the complexity involved in discussing the large number of fish and wildlife species on forest lands, assemblages or groups of wildlife associated with vegetative communities or key habitat components have been selected as management indicators in the STNF LRMP (USFS 1995). Nine wildlife management indicator assemblages, three fisheries management indicator assemblages, and five fish species representing the fisheries assemblages were selected. The nine wildlife management indicator assemblages are as follows:

1. Late Seral Stage;
2. Openings and Early Seral Stage;
3. Multi-habitat;
4. Snag and Down Log;
5. Riparian;
6. Aquatic;

7. Hardwood;
8. Chaparral; and
9. Cliffs, Caves, Talus, and Rock Outcrops.

The three fisheries management indicator assemblages and their management indicator species are as follows:

1. Anadromous fish assemblage consists of winter-run steelhead, spring-run Chinook, and summer steelhead;
2. Inland coldwater fish assemblage consists of rainbow trout; and
3. Inland warmwater fish assemblage consists of largemouth bass (*Micropterus salmoides*).

Project-level analysis complements the more comprehensive forest-level analysis outlined in the STNF LRMP (USFS 1995). Project-level effects on management indicator assemblages are analyzed and disclosed as part of environmental analysis under NEPA. This work involves the examination of the impacts of project alternatives on management indicator assemblage habitat by discussing how direct, indirect, and cumulative effects would change the quantity and/or quality of assemblage habitat in the analysis area.

Guidance regarding the management indicator assemblages, as set forth in the STNF LRMP, directs the USFS resource managers to (1) analyze the effects of proposed projects on the habitats of each management indicator assemblage affected by the project at the project scale and (2) monitor populations and/or habitat trends of the management indicator assemblages at the forest or bioregional scale. In order to evaluate the effects of the project alternatives on the management indicator assemblages, the following steps can be followed:

- Identify which management indicator assemblages have habitat that would be either directly or indirectly affected by the project alternatives (these would be the assemblages that would be potentially affected by the project).
- Disclose the forest- or bioregional-level monitoring requirements for this subset of management indicator assemblages.
- Analyze project-level effects on management indicator assemblage habitats or habitat components for this subset.
- Discuss the forest-scale habitat trends and/or the bioregional population trends of representative species for this subset.
- Relate project-level impacts on management indicator assemblage habitat to habitat at the forest scale and/or to population trends of representative species of the affected assemblages at the forest or bioregional scale.

STNF Management Indicator Species

The purpose of the MIS report is to evaluate and disclose the impacts of the project on the Shasta-Trinity MIS identified in the STNF LRMP (USFS 1995). MIS are animal or plant species identified in the STNF LRMP (USFS 1995), which was developed under the 1982 National Forest System Land and Resource Management Planning Rule (1982 Planning Rule) (36 CFR part 219). Guidance regarding MIS set forth in the STNF LRMP directs USFS resource managers to (1) at project scale, analyze the effects of proposed projects on the habitats of each MIS affected by such projects, and (2) at the national forest or bioregional scale, monitor populations and/or habitat trends of forest MIS, as identified by the LRMP.

In order to evaluate the effects of the proposed project on MIS, candidate MIS were reviewed, and selected representative species were selected for the analysis. The MIS habitat assemblages and fish species are summarized in further detail below. The MIS assemblages are analyzed under section 3.2.2.3 (Impacts from the Proposed Action).

STNF Fishery Management Indicator Species

MIS were chosen to represent several fish assemblages (USFS 1995). **Table 3.2-2** details fishery assemblages and MIS representative species within the project area.

Survey and Manage Species

The Aquatic Conservation Strategy of the NWFP was designed to restore and maintain ecological processes for aquatic and riparian area conservation on Federal lands in the western portion of the Pacific Northwest. Forestwide standards and guidelines for Survey and Manage old-growth associated species were revised in January 2001 and described in the *Record of Decision and Standards & Guidelines for Amendments to the Survey and Manage, Protection Buffer, and Other Mitigation Measures Standards and Guidelines* (USDA and DOI 2001). Therefore, the USFS and BLM must analyze impacts to Survey and Manage species. Survey and Manage species were identified in the Northwest Forest Plan ROD and generally include species for which late successional reserves do not provide adequate habitat or conservation (e.g., generally cryptogams [like lichens] and mosses, or invertebrate animals [like terrestrial snails]). The Survey and Manage species are put on this list if they have not been added to or if they have been removed from agencies' special-status program.

Survey and Manage Plant Species

Ten Survey and Manage plant species are considered to have suitable habitat within the project area (**table 3.2-3**). Predisturbance Survey and Manage plant species surveys were conducted on BLM, USFS, and Reclamation lands by USFS botanists during 2006.

In 2006, a pedestrian survey and assessment of the USFS Survey and Manage plant species was conducted by USFS botanists for the project area on Federal lands. However, surveys conducted by the USFS did not find any individuals or populations of any the listed Survey and Manage species.

Table 3.2-2 Fishery Assemblages and MIS Representative Species within the Project Area

Fish Assemblage	Group MIS Representative
Anadromous commercial/recreational sportfish	Spring-run Chinook (South Fork Trinity River only) winter-run steelhead
Anadromous threatened, endangered, and sensitive sportfish	Spring-run (summer) steelhead (South Fork Trinity River only)
Inland coldwater sportfish	Rainbow trout
Inland warmwater sportfish	Largemouth bass

Table 3.2-3 Survey and Manage Plant Species That May Occur within the Project Area

Scientific Name	Common Name	Life Form
Ptilidium californicum	Pacific fuzzwort	Nonvascular (liverwort)
Tetraphis geniculata	None	Nonvascular (moss)
Schistostegia pennata	Goblin's gold	Nonvascular (moss)
Buxbaumia viridis	Bug-on-a-stick	Nonvascular (moss)
Cypripedium montanum	Mountain lady's-slipper	Vascular plant
Cypripedium fasciculatum	Fascicled lady's-slipper	Vascular plant
Botrychium minganense	Mingan moonwort	Vascular plant
Botrychium montanum	Mountain moonwort	Vascular plant
Eucephalis vialis	Wayside aster	Vascular plant
Leptogium cyanescens	Blue jelly-skin lichen	Lichen

Survey and Manage Terrestrial Mollusk Species

The project lies within the range of four Survey and Manage terrestrial mollusk species (**table 3.2-4**). Pre-disturbance terrestrial mollusk surveys were conducted on BLM, USFS, and Reclamation lands by using the *Survey Protocol for Survey and Manage Terrestrial Mollusk Species from the Northwest Forest Plan* (Duncan et al. 2003).

The 2006 surveys did not locate any of the Survey and Manage terrestrial mollusk species. However, the surveys did identify the foothill shoulderband (*Helminthoglypta cypreophila*); Klamath sideband (*Monadenia churchi*); retriculate taildropper (*Prophysaon andersoni*); and unidentified species of lancetooth (*Haplotrema* spp.), juga (*Juga* spp.), and chaparral (*Trilobopsis* spp.) as occurring in the project area.

Table 3.2-4 Survey and Manage Terrestrial Mollusk Species That May Occur within the Project Area

Scientific Name	Common Name	Habitat
Helminthoglypta talmadgei	Trinity shoulderband	Stable talus and rockslides in limestone substrates near springs or streams; trees and bushes important for food and shading.
Monadenia chaceana	Siskiyou sideband	Talus and rock slides, under rocks and woody debris in moist conifer forests, caves, shrubby areas in riparian corridors.
Vespericola pressleyi	Big bar hesperian	Restricted to permanently damp situations, within 600 ft of seeps, springs, and stable streams.
Vespericola shasta	Shasta hesperian	Associated with deciduous vegetation and woody debris in perennially moist areas within 600 ft of riparian zones, springs, seeps, marshes, and in the mouths of caves.

Riparian Reserves

Riparian Reserves encompassing headwater streams on Federal lands were established with adoption of the Northwest Forest Plan. Riparian Reserves are portions of watersheds for which the primary management emphasis would be riparian-dependent resources. Within Riparian Reserves, USFS management practices are a component of the Aquatic Conservation Strategy (USFS and BLM 1994). (An aquatic conservation strategy [ACS] for the project is provided in section 3.2.2.3.) Riparian Reserves have prescribed widths that depend on their classification and that are intended to provide a high level of fish, wildlife, and riparian habitat protection. Although Riparian Reserve boundaries on permanently flowing streams may be adjusted, they are considered to be the approximate widths necessary for attaining ACS objectives. Riparian Reserve distance width boundaries for permanently flowing streams are described below.

Riparian Reserves are specified as one of five categories of streams or water bodies. The following designations describe the stream or water body classification and the prescribed limits of disturbance:

- *Fish-bearing streams.* Riparian Reserves consist of the stream and the area on each side of the stream extending from the edges of the active stream channel to the top of the inner gorge, the outer edges of the 100-year floodplain, the outer edges of riparian vegetation, a distance equal to the height of two site-potential trees, or the 300-ft slope distance (600 ft total, including both sides of the stream channel), whichever is greatest.

- *Permanently flowing non-fish-bearing streams.* Riparian Reserves consist of the stream and the area on each side of the stream channel extending from the edges of the active stream channel to the top of the inner gorge, the outer edges of riparian vegetation, a distance equal to the height of one site-potential tree, or the 150-ft slope distance (300 ft total, including both sides of the stream channel), whichever is greatest.

- *Constructed ponds and reservoirs; wetlands greater than 1 acre.* Riparian Reserves consist of the body of water or wetland and the area to the outer edges of the riparian vegetation, a distance equal to the height of one site-potential tree, the 150-ft slope distance from the edge of the wetland greater than 1 acre, or the maximum pool elevation of constructed ponds and reservoirs, whichever is greatest.

- *Lakes and natural ponds.* Riparian Reserves consist of the body of water and the area to the outer edges of the riparian vegetation, the extent of seasonally saturated soil, the extent of unstable and potentially unstable areas, the distance equal to the height of two-site potential trees, or the 300-ft slope distance, whichever is greatest.

- *Seasonally flowing or intermittent streams, wetlands less than 1 acre, and unstable and potentially unstable areas.* This category applies to features that are highly variable in size and site-specific characteristics. At a minimum, the Riparian Reserves must:

  – Include the extent of unstable and potentially unstable areas (including earthflows);

- Include the stream channel and extend to the top of the inner gorge;

- Include the stream channel or wetland and the area from the edges of the stream channel or wetland to the out edges of the riparian vegetation; and

- Extend from the edges of the stream channel to a distance equal to the height of one site-potential tree, or the 100-ft slope distance, whichever is greatest.

Within the STNF LRMP, there are Riparian Reserves that are identified but they are not a mapped resource.

3.2.2 Environmental Consequences

The effects on biological resources that could result from implementing the proposed project are described below. Direct impacts are caused by an action and generally occur at the same time and place (e.g., those that occur as a result of construction, operation, or maintenance of the transmission line). Indirect impacts generally occur later in time or farther removed in distance, but they are still due to the presence of the transmission line. They are usually associated with increased human accessibility to a previously inaccessible area. Short-term impacts are those that last through the construction phase of a project and/or one or two reproductive cycles, whichever is longer. Long-term impacts may last beyond the life of the transmission line, depending on the organism or habitat involved. Cumulative impacts (addressed in section 4.1.2) result from the incremental impact of an action when added to other past, present, and reasonably foreseeable future actions, regardless of what agency or person undertakes the other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over time.

3.2.2.1 Standards of Significance

Significance criteria were developed to assess impacts on biological resources and were evaluated relative to a number of standards of significance.

Impact significance was determined on the basis of the (1) areal extent of the change, including the project footprint and affected adjacent areas; (2) characteristics of the area affected; (3) magnitude of the change (deviation from the baseline) anticipated; (4) season when the impact would occur; (5) duration of impact; (6) sensitivity of biological resources to change; and (7) rarity and importance of the resource. For purposes of this assessment, impacts from the proposed action on biological resources would be considered significant if they would result in, or contribute to, any of the following:

- Reduce the quality and/or quantity of habitat for vegetation, wildlife, or fisheries to an unusable level;

- Decrease a population to below self-sustaining levels;

- Establish or increase noxious weed populations;
- Eliminate a plant or animal community;
- Interfere with the movement of any resident or migratory fish or wildlife species for more than one reproductive season;
- Impact riparian areas or other wetlands by altering their hydrology or vegetative community structure, disrupting their soils, or reducing or modifying their functions;
- Jeopardize the continued existence of any species listed as endangered or threatened;
- Cause a proposed, candidate, or sensitive species to become listed or cause a threatened species to become endangered;
- Destroy or adversely modify designated critical habitat so that it was no longer useful to the species for which it was listed;
- Result in a violation of the ESA, Bald and Golden Eagle Protection Act, Migratory Bird Treaty Act, or other applicable Federal or State laws; or
- Conflict with USFS or BLM management strategies for biological resources.

3.2.2.2 Environmental Protection Measures

The impacts evaluation considered the incorporation of general and specific mitigation and/or protection measures to reduce the overall impact(s), unless otherwise noted. With these measures in place, many impacts to biological resources from project construction and operation could be avoided or minimized. The proposed biological protection measures that would be applied for the project are outlined below:

- Terms and conditions developed during the consultation period under section 7 of the ESA would be adhered to as specified in the Biological Opinions of the USFWS and/or NMFS. In addition, mitigation or conservation measures developed in conjunction with the CDFG would be followed.
- All personnel entering the project area would be required to undergo environmental awareness training prior to entering the construction area. The training would address Federal, State, and tribal laws and regulations regarding antiquities, fossils, plants, and wildlife, including collection and removal, the importance of these resources, and the purpose and necessity of protecting them. The list of all persons trained would be kept during the course of construction.
- To the extent possible, grading and grubbing of low-growing vegetation cover would be avoided on all new spur roads and structure pad locations, and all vehicular traffic would

have to drive within the designated ROW and on nonpublic access roads travel at speeds not to exceed 15 mph).

- Vehicle operation off the ROW shall be prohibited or limited to existing roads.

- Staging of equipment and supplies and parking of vehicles would be restricted to previously disturbed areas to the extent practical.

- During construction, no equipment would be refueled and no oil would be changed within 300 ft of any water body or streams. Oil spill cleanup kits would be available on site in the event an accidental spill occurred.

- Construction activities within the Riparian Reserve would follow the limits of disturbance by the project. When clearing is required in Riparian Reserves, at least six large logs per acre would be left to meet woody debris objectives.

- Vegetation would be controlled or removed in accordance with the IVM (Western 2007a) and land management agency requirements.

- Low water crossings would require the placement of native rock or clean, washed gravel in the stream channels to minimize construction traffic impacts.

- Regulated materials would not be drained onto the ground, into streams, or into drainage areas. All construction waste, including trash and litter, garbage, other solid waste, petroleum products, and other potentially hazardous materials, would be properly disposed of.

- All noxious weed populations would be identified within the project area and flagged prior to construction activities. Any identified populations would be treated by using a recognized vegetation treatment identified by the USFS, BLM, and Reclamation and would comply with applicable plans (e.g., the STNF LRMP [USFS 1995]).

- Herbicides would be used when needed to control noxious weeds. Herbicides would be applied by licensed applicators in accordance with Federal and California State regulations and labeled directions. On USFS-administered lands, application rates would not exceed those analyzed in the risk assessments presented in appendix D. The approved permits would be obtained prior to herbicide implementation.

- If direct control methods or the removal of noxious weed infestations in construction disturbance areas is not feasible, the noxious plants could be cut and destroyed in a manner that is acceptable to the land management agencies.

- Equipment would have to be cleaned before entering the ROW. In addition, vehicles and equipment that had driven through or parked in a noxious-weed-infested area would have to be cleaned before they could leave the area.

- Disturbed areas would be reseeded with regionally native species in accordance with applicable land management agency requirements, then mulched with certified weed-free straw.

- Noxious weeds would be monitored for 3 years after construction activities, and any identified infestations would be treated with approved methods.

- Silt fences would be placed on the downstream sides of all tower pole augering locations.

- If helicopter use cannot be scheduled to avoid the raptor nesting/breeding period (approximately April 15 to August 15), then preconstruction raptor nest searches would be conducted to identify nesting raptors in the project area. A qualified biologist would conduct project-area-wide raptor nest surveys in appropriate habitats for listed species prior to commencement of ROW clearing and construction. The following measures would be incorporated to minimize helicopter noise impacts:

  – Helicopter pads would be buffered by using ridges or other sound-attenuating landscape features where available and practical.

  – Helicopter flight paths would be designed to provide a buffering distance from nest activity areas of listed species.

  – Helicopter flight paths would use terrain features that would reduce noise impacts to any identified sensitive species nest locations.

- All construction activities would be restricted to designated work areas, with all off-ROW vehicle use occurring only on existing, designated roads, including new spur roads.

- The line over the two Trinity River crossings would be marked with the best technology currently available to alert bald eagles and other birds to the presence of an obstruction.

- The recommendations in the National Bald Eagle Management Guidelines (USFWS 2007d) should be followed.

- Because of steep slopes and inaccessible terrain, and in order to avoid a greater impact from road construction, helicopters will be used to yard logs away from the ROW in a portion of the project (between markers 1/1 and 5/4). A flight plan will be generated for the USFS that will specify the following:

  – Helicopters will not fly over the currently identified northern spotted owl nesting sites, and

  – Helicopters will yard material away from the line to the west and to the south, again avoiding the three known northern spotted owl nesting sites.

- Improvements to northern spotted owl habitat (**figure 3.2-3**) conducted by the USFS would be funded by Western at a ratio of 5 acres improved for every acre disturbed in critical habitat, 7 acres improved for each acre disturbed in nesting and roosting habitat, and 3 acres improved for each acre disturbed in areas capable of becoming northern spotted owl habitat.

- Funds to enhance fisher habitat would be provided to the degree that the proposed action would adversely alter existing fisher habitat.

- Preconstruction surveys for sensitive plants and wildlife on private lands would be conducted by qualified biologists for spur roads and other areas that would be subject to surface disturbance during the appropriate season prior to construction.

3.2.2.3 Impacts from the Proposed Action

Vegetation

Construction activities that would affect vegetation include (1) blading and grading of spur roads, pulling and tensioning of sites, and construction pad clearance at each support structure site; (2) improvements to some portions of the existing access roads and construction of spur roads; (3) ROW clearing, including removal of danger trees adjacent to the ROW; (4) excavations resulting from augering holes for support structures; and (5) potential introduction and proliferation of noxious weeds.

The project ROW would be 80 ft wide and approximately 16.2 mi long, an area that would occupy about 157 acres. Approximately 12.8 acres within Segment 1 of the Proposed Route contains the existing 20-ft ROW. ROW clearing for the transmission line would require removing trees and shrubs that might grow into the line. In some portion of the ROW (e.g., deep ravines), vegetation might be left essentially intact. In addition, trees growing outside the ROW that might fall into the line (danger trees) would be removed. Woody vegetation and low-growing species would be left in place to the extent practical, to provide wildlife habitat and to reduce erosion and visual impacts. Most vegetation, except possibly grass and forbs, would also be cleared from construction staging areas, construction headquarters, and helipads. All vegetation would be removed within new access roads and for the switchyard.

The estimates in **table 2-1** indicate up to 31.5 acres of disturbance would be associated with transmission pole sites, guy wire pockets, conductor site pull areas, construction staging areas, construction headquarters, and helipads, and an additional 2.2 acres would be associated with access roads and the switchyard. New disturbance would create areas of habitat suitable for new noxious weeds to become established. Invasive species can threaten the existence of many native plants and greatly reduce plant diversity (BPA 2000). The disturbed sites would be monitored, and any colonizing noxious weeds would be actively controlled via an approved control methodology. Specific mitigation measures for controlling noxious weeds (including cleaning vehicles and equipment) are described in section 3.2.2.2. If necessary, herbicides for the control of noxious weeds would be used in accordance with label directions, county and agency regulations, and the IVM (Western 2007a). A list of herbicides approved for use in California by

Western and a risk analysis summary of the approved USFS herbicides are provided in appendix D. The approved permits would be obtained before these herbicides would be used. Thus, it is expected that the proposed action would not result in the uncontrolled expansion of noxious weeds and would have a small impact.

Soil compaction caused by heavy machinery would destroy ground flora and indirectly damage (by reducing soil aeration and altering soil structure) roots of trees (even trees outside the ROW whose roots extend into the ROW). Where helicopters are used, the potential for soil compaction would be minimized. Other possible adverse construction effects would include the deposition of dust and other particulates from the operation of vehicles (including helicopters) and large machinery on plants. The potential for fugitive dust impacts and soil compaction would be largely limited to the immediate footprint of the construction sites and access roads and would not be uniformly distributed or widespread throughout the length and width of the ROW. Because construction activities at any one point would be short term and because travel along access roads would be limited, adverse impacts on vegetation from dust would be negligible.

The vegetation within the ROW segments would be maintained in an early successional state, with maintenance performed on an average 5-year cycle by selective hand cutting and herbicide application. Maintenance occurring during winter months would limit soil compaction. Approved herbicides would be applied only by means of selective basal spray by workers using hand-held applicators rather than a broadcast application throughout the ROW. Potential effects on nontarget plants would be limited to plants that were located very close to treated areas and were in a sensitive growth stage at the time of contact (Giesy et al. 2000). In comparison with herbicide use, mechanical methods to control vegetation generally cause a loss of diversity, reduce wildlife habitat (e.g., habitat becomes cyclic rather than stable), and increase the potential for petroleum product pollution. Selective basal herbicide application is an ecologically desirable means of encouraging the development of relatively stable shrublands, thereby decreasing the number of invading tree seedlings, and it could reduce the amount of future herbicide use (Dreyer and Niering 1986).

Vegetation removal would be consistent with Western's clearing specifications for the project, the IVM (Western 2007a), and land management agency requirements. The existing shrub and low tree understory would remain in place to the extent possible and would be managed to maintain a minimum conductor clearance. The ROW would be managed to become a shrub/brush cover type. Short-term disturbances to vegetation would be associated with the construction phase, new spur road construction, and access road improvements. Long-term disturbance would be associated with periodic vegetation management of the ROW for conductor clearance over the life of the transmission line. Temporary and permanent disturbance acreage calculations were estimated for the project (see **table 2-1**).

Overall, construction and maintenance of the project would have a small impact on vegetation communities.

Wildlife

Construction of the project would affect wildlife as a result of (1) habitat loss, alteration, or fragmentation; (2) disturbance and/or displacement from noise and construction activities;

(3) mortality from collisions with conductors and shield wires; (4) obstruction to movement; and (5) chronic or acute toxicity from herbicide or fuel spills.

During construction, more mobile species would be displaced from the ROW area to similar habitats nearby; less mobile species, such as small mammals, reptiles, amphibians, bird eggs, and nestlings, could be destroyed. Because of the relatively small area affected by the project (see **table 2-1**), displacement and mortality of wildlife would not result in any regional population declines. Some displaced wildlife would return to newly disturbed areas shortly after construction was completed.

Principal sources of noise during construction would include vehicle and helicopter traffic, operation of construction equipment, and blasting. The effects of project-related noise levels on wildlife would depend on the patterns of occurrence and intensity of the noise. Responses of individual wildlife might vary on the basis of their degree of tolerance. Operation and maintenance activities would involve one inspection trip per year (possibly aerial) and vegetation management activities every 5 years. These operation and maintenance activities would result in localized short-term displacement of wildlife.

Blasting would be required at locations where augers were ineffective for drilling holes for the poles. The blasts would create a short-term boom (less than 0.5 second), resulting in a short-term localized change in noise levels and ground vibrations. The character of the blast and ground vibrations would depend on various factors, such as the type of soil/rock, type of explosive, amount of explosive used, depth of explosion, and meteorological conditions. Under most conditions, ground vibrations would not be felt outside a 300-ft radius from the point of blast.

Direct short-term noise impacts on wildlife from blasting could range from minor behavioral responses to changes in the use of an area. Most wildlife would vacate the area as a result of human presence before blasting occurred. Blasting would be of short duration, and there would be no measurable long-term effect on population numbers or distribution over a species range of occurrence. Therefore, blasting would have a localized short-term impact on wildlife.

Helicopters would be used for delivering equipment and personnel to locations inaccessible by surface transportation vehicles. Helicopters would also be used to remove harvested trees and slash to truck loading areas. Wildlife near the helicopter flight path and designated landing areas would be exposed to an increase in noise levels. The duration of exposure to noise at any one location would be a short-term impact (e.g., usually less than 5 minutes). Overall, the helicopter-generated noise levels would be in the range of noise levels generated by general construction equipment. Therefore, the use of helicopter(s) for construction of the proposed action would have a short-term, small impact to wildlife.

Overall, project construction would have a small impact on terrestrial wildlife.

A ROW can function in five ways for wildlife (Jalkotzy et al. 1997). It can act as a:

- Habitat, by providing some requisites for survival, such as food or shelter;

- Conduit, by providing a corridor for movement;
- Filter or barrier, by hindering movement along or across it;
- Source, when wildlife living within it spread out into surrounding areas; and
- Sink, when wildlife are attracted to it and die as a result (e.g., collisions with transmission lines).

The edges provided by ROWs can be areas of relatively high biological productivity. Medium-sized predators concentrate in ROW edges because of the increased availability of prey there (Williams 1995). Furthermore, ROWs can increase the browse available to ungulates (Lunseth 1987). Wildlife species least likely to be affected by the project, either beneficially or adversely, would be habitat generalists.

The presence of the transmission line would pose a mortality risk to birds from collisions with the conductors and overhead ground wires. In addition, turning structures and approximately 95 additional single poles would be guyed with wire cable to anchors in the ground. Single poles could have up to 4 guys, and three-pole turning structures could have up to 12 guys. Birds could collide with transmission lines and guy wires during periods of poor visibility or during movements to and from feeding and loafing or nesting areas. The crossings of the Trinity River would pose the greatest mortality risk to birds, because birds feed and travel along the river corridor.

Some mortality resulting from bird collisions with the transmission lines is considered unavoidable. However, anticipated mortality levels are not expected to result in long-term loss of population viability in any individual species or lead to a trend toward listing as a rare or endangered species, because mortality levels are expected to be low and spread over the life of the transmission line. One mitigation measure that would be incorporated into the project design to reduce collisions would be to attach State-of-the-art marking devices to overhead wires at the Trinity River crossings. Brown and Drewien (1995) summarized other studies that showed that markers reduced bird collision mortality by 28% to 89%.

Bird electrocution would not occur with the project area because the spacing between conductors and from conductor to grounded objects would follow guidelines outlined in APLIC and USFWS (2005). With the use of proposed mitigation measures to reduce bird mortality, impacts from the transmission line would not affect the biological viability of local, regional, or national populations of bird species. Thus, operation of the project would have a small impact on birds.

Vegetation cutting during scheduled ROW maintenance would cause short-term disturbance of wildlife in the immediate vicinity of such activities. Animals that inhabit shrubs and small tress within the ROW would be displaced to adjacent habitats. The relatively low frequency of this activity (i.e., once every 5 years) would reduce the severity of the impact. Herbicides that might be used for the ROW maintenance program are considered to be of very low toxicity to practically nontoxic to wildlife (see appendix D). Thus, any adverse toxicological threat from herbicides to wildlife would be unlikely. The response of wildlife to herbicide use would be primarily attributable to habitat changes resulting from treatment rather than direct toxic effects of the applied herbicide on wildlife. The ROW might provide increased forage habitat for mule deer. Forage habitat is not currently at optimal conditions in the area (USFS 2004a).

Overall, the effects of the project on wildlife are expected to be minor at the population level and might not be detectable above natural population fluctuations or from fluctuations resulting from other activities in the area (e.g., timber production, fires, and recreation).

Fisheries

Only minimal clearing of the ROW would occur near water bodies. Potential impacts could include changes in water surface flow patterns, deposition of sediment in surface water bodies, changes in water quality or temperature regimes, and loss of riparian vegetation. These impacts could lead to alteration or loss of fish habitat and obstruction to fish movement.

Potential impacts to fish from erosion (e.g., turbidity and sedimentation) would be small because only minimal clearing of the ROW would occur near water bodies and because of the mitigation measures that would be implemented (see section 2.6).

In general, stream temperature alteration is one of the more significant impacts that could occur as a result of clearing riparian vegetation. However, only a short linear width of riparian vegetation at any stream crossing (e.g., 80 ft plus removal of adjacent danger trees) would require clearing for the project. Localized stream warming would be negligible over this distance, especially because efforts would be undertaken to preserve riparian vegetation to the extent practicable. In some locations (e.g., across steep ravines), riparian vegetation would not require clearing.

The project would span the Trinity River (twice), Little Browns Creek, and Rush Creek. It would be constructed during the summer months during a time of low-flow periods and would not directly impact the Trinity River or the Little Browns Creek and Rush Creek stream channels. In addition, an access road network already exists, and no additional disturbances would occur on the Trinity River, Little Browns Creek, and Rush Creek. Therefore, the proposed action would not directly disturb fish habitat within these three stream and river channels.

There would be 3 intermittent streams and 11 ephemeral streams impacted by access road improvements across or adjacent to streams; 1 additional ephemeral stream would be impacted by construction of a new spur road. These streams are very low in volume and mostly run over a rocky substrate. Work in these 15 streams would consist of placing clean rock in streams, removing and/or placing culverts, or gravelling a road across dry streams. If a culvert was removed and not replaced, the crossing would be converted to a low-water crossing. Construction traffic through these crossings could result in short-term increases in sedimentation. However, since construction of the project would occur during the summer months when the streams would mostly be dry or have low flows, this impact is not anticipated to be significant. To further minimize potential impacts, the use of existing access roads would require the hand placement of clean native rock or the gravelling of roads to improve the stream crossing for construction vehicles. The placement of native rock and gravel could result in short-term increased sedimentation impacts in the downstream reaches of the stream channels. These impacts would primarily occur following the first rains after the project was completed. These would be short-term and localized impacts that would not result in a significant change above baseline levels.

During operation of the transmission line, aquatic systems might be adversely affected by maintenance activities, primarily vegetation control. However, vegetation control near stream crossings would be infrequent (occurring no more than once every 5 years) and at a lower activity level than would occur during construction. Only select trees might have to be removed or trimmed. Control of vegetation within streamside buffer zones would be accomplished by manual techniques. Therefore, erosion of stream banks from maintenance activities would be expected to be negligible. Accidental release of toxicants (e.g., gasoline and lubricants) would not be expected because heavy machinery would not be used near streams. Most of the herbicides that might be used are of low toxicity to aquatic organisms (see appendix D). Therefore, potential impacts from selected land application of herbicides for project maintenance would be even more protective of aquatic biota, since there would be no herbicide application within aquatic habitats.

Special-Status Species and Habitats

This section evaluates the potential impacts of the project on special-status species and habitats, including federally listed or candidate species and, as applicable, their critical habitats; USFS and BLM sensitive species; wildlife management indicator assemblages; Survey and Manage species; Riparian Reserves; and ACSs. For those special-status species or habitats that might be present within the immediate project area, impacts would be similar to those previously discussed for other vegetation, wildlife, and aquatic biota. However, because the distribution and/or abundance of special-status species are limited, any impact could affect the viability and survival of these species in the area. Impacts to special-status habitats could affect their function and capacity to support diverse and/or unique wildlife communities. These place greater importance on the successful implementation of the EPMs detailed in section 3.2.2.2.

Endangered and Threatened Wildlife Species

Of the species that are federally listed or a candidate for listing, the Pacific fisher, bald eagle, northern spotted owl, and coho salmon are the only ones that might occur in the project area. Biological assessments for these species are included in appendix F. The project area does occur within designated critical habitat for the northern spotted owl and coho salmon. The project area lies outside the known or expected ranges of the McDonald’s rock-cress (Calflora 2007), marbled murrelet (Ralph et al. 1995), California red-legged frog (USFWS 2002), and yellow-billed cuckoo.

Bald Eagle (Formerly Threatened but Recently Delisted)

The project area contains areas of suitable bald eagle nesting habitat. However, no nests have been identified within the project area. Construction of the ROWs might occur in habitats suitable for nesting and winter roosting. The removal of this habitat would have a long-term impact. To mitigate these direct effects, the project would comply with site-specific timing limitations and conservation measures for surface disturbance as identified during project-specific consultation with the USFWS.

Presence of the transmission line could result in collisions, particularly at the Trinity River crossings. The overhead ground wires would be marked with current State-of-the-art devices, where necessary, to minimize collisions. Line spacing, conductor layout, and utility pole construction would minimize electrocution hazards. Construction and operation of the project would not be likely to adversely affect the bald eagles, particularly if EPMs, such as the recommendations in the National Bald Eagle Management Guidelines (USFWS 2007d), were adhered to.

Northern Spotted Owl (Threatened)

The northern spotted owl is listed as threatened under the ESA, and it has designated critical habitat in the project area. The project would traverse active northern spotted owl home ranges (**figure 3.2-1**). Therefore, construction of the project could impact individual spotted owls through habitat loss and disturbance (e.g., helicopter noise). Delaney et al. (1999) concluded that a 345-ft buffer zone for helicopter flights would minimize flush responses and potential impacts on nesting activity for Mexican spotted owls (*Strix occidentalis lucida*). They found that ground-based disturbances (i.e., chainsaws) caused a greater flush response than did helicopters. Nevertheless, the helicopter hovering that would occur when support poles were installed could elicit a greater response than would noise from a short helicopter overpass. However, the ROW segments would not pass through core areas of northern spotted owl home ranges. Core areas are the portions of the home range that are most intensely used (Bingham and Noon 1997). The core area could be roughly considered to be similar to the owl’s 0.7-mi territory radius (**figure 3.2-1**).

Substantial amounts of old-growth forest are required for high survival rates of northern spotted owls. However, forest edges (e.g., such as those that would be created by the project and that do not occur within the owl’s core area of late seral forest) can have a beneficial effect by increasing prey species populations (e.g., woodrats [*Neotoma* spp.]) (Franklin et al. 2000; Noon and Blakesley 2006; Ward et al. 1998). Nevertheless, localized adverse effects to northern spotted owl habitat could occur as a result of a reduction of canopy closure, simplification in vertical structure, a reduction in smaller-diameter snags and logs, and a reduction in potential nesting opportunities. However, clearing for a narrow ROW would not be considered to be the type of fragmentation that could isolate individual owls or populations of owls, because the distance between suitable habitat patches would be minor. Thus, no loss in habitat connectivity would occur. **Table 3.2-5** details proposed impacts to northern spotted owl habitats. Not all of these impacts would constitute a long-term modification because ground cover at the pulling sites and around guys would be allowed to naturally revegetate.

A review of **table 3.2-5** and **figure 3.2-2** shows that nearly 35.4 acres of the project area would transverse critical habitat, including habitat designated as nesting and roosting, foraging, connectivity, capable, and not capable of becoming northern spotted owl habitat. Within the private land crossed by the project, 40 acres are considered foraging habitat and 20.2 acres are designated as nesting and roosting habitat.

To mitigate the direct loss of northern spotted owl habitat, Western would fund habitat improvements at a ratio of 5 acres improved for every acre disturbed in critical habitat, 7 acres improved for each acre disturbed in nesting and roosting habitat, and 3 acres improved for each acre disturbed in areas capable of becoming northern spotted owl habitat (Bridges 2007).

Table 3.2-5 Northern Spotted Owl Habitat Types Crossed by the Project

	Land Ownership[a]			
Habitat	USFS	BLM	Private	Total
Nesting and roosting	9.58 (8.93)[b]	1.73 (0.25)	20.2 –[c]	31.51 (9.18)
Foraging	1.22 (0.78)	0.0 (0.0)	40.0 –	41.22 (0.78)
Connectivity	14.47 (10.34)	0.0 (0.0)	0.0 –	14.47 (10.34)
Capable of becoming habitat	1.28 (1.28)	0.0 (0.0)	0.0 –	1.28 (1.28)
Not capable of becoming habitat	29.56 (13.81)	2.33 (0.0)	0.0 –	31.89 (13.81)
Total within ROW	56.11 (35.15)	4.06 (0.25)	60.2 (–)	120.37 (35.4)

[a] Values provided are in acres.

[b] Values in parentheses are critical habitat acres.

[c] Critical habitat does not occur on private lands.

Sources: Bridges (2007); Wieringa (2007).

Nesting and breeding activities may be disturbed by the use of helicopters to clear ROW vegetation during spring. Western will conduct spring surveys to determine the nesting status of the Eastman Gulch northern spotted owl pair. Helicopter flight paths would be established to avoid nesting sites. In addition, it has been determined that, in the Pacific Northwest, habitat conservation measures proposed and implemented for the northern spotted owl and for Riparian Reserves are generally sufficient to prevent the extirpation of this species, but ongoing management reassessment, monitoring, and adaptive management are important (USFS et al. 1993; FEMAT 1993; Thomas et al. 1993). Therefore, the proposed habitat conservation measures and distance standards for Riparian Reserves and the general project specifications and conservation measures ensure that the proposed action would not contribute to the further decline of the northern spotted owl (i.e., construction and operation of the project would not be likely to adversely affect the northern spotted owl; however, helicopter operations may result in incidental take, depending on the nesting status of owl pairs during helicopter operations).

The USFWS designated 6.9 million acres of northern spotted owl critical habitat, of which 20%, or 1,409,000 acres (1,301,000 acres on USFS-administered public lands and 108,000 acres on BLM-administered public lands), is located in California (50 CFR part 17). The project would cross approximately 3.8 mi of designated northern spotted owl critical habitat (**figure 3.2-2**). The existing 12-kV distribution line occupies a 20-ft ROW easement along this 3.8-mi length of designated northern spotted owl critical habitat that resulted in 9.2 acres of previous disturbance. The proposed action would expand the ROW by 60 ft (30 ft on each side of the centerline) along the same 3.8-mi length of ROW corridor within designated critical habitat. Therefore, the 60 ft of expanded ROW would result in the loss or conversion of approximately 27.6 acres (3.8 mi × 60 ft of new disturbance) of designated northern spotted owl critical habitat. The total loss or conversion of 36.8 acres would result in a net reduction of 0.0005% in regional northern spotted owl critical habitat, and a 0.003% net reduction in designated northern spotted owl critical habitat in the State of California.

To offset the direct loss or conversion of 36.8 acres of designated northern spotted owl critical habitat, the project applicant would conserve and manage acreage off-site to mitigate this acreage loss pursuant to conservation measures prescribed in the USFWS Biological Opinion.

Coho Salmon (Threatened) and MIS Fish

The following text evaluates the potential impact of the project on the SONCC coho salmon ESU and on Chinook salmon and steelhead, designated as MIS in the STNF LRMP. The direct and indirect effects of the project on these fish species are addressed together because they would be similar in scale, duration, and intensity. A thorough assessment of potential effects on the SONCC coho salmon can be found in the biological assessment for this species provided in appendix F.

The project could result in short-term increases in sedimentation and turbidity in the downstream reaches of streams traversed by the ROW and access roads. To the extent practicable, the transmission poles would be located outside of floodplains, and erosion and sedimentation controls would be used to minimize impacts.

In addition to support pole installation, disturbance would occur from construction staging areas, helipads, conductor pull areas, guy wire pockets, construction headquarters, access roads, and switchyards (**table 2-1**). This could result in short-term increases in sedimentation and turbidity in the downstream reaches of the streams traversed by the project.

No aspects of project construction would occur in the Trinity River or the stream channels of Little Browns Creeks and Rush Creek. In addition, an existing access road network already exists; therefore, the Trinity River, Little Browns Creek, and Rush Creek would not require any new disturbances for creek and river crossings. To further minimize impacts to coho salmon, Chinook salmon, and steelhead, the project would use a network of existing roads, and construction would occur during the summer months to avoid the primary spawning season. In addition, sediment fences would be placed around the downstream slopes of tower locations to minimize the off-site transport of sediment. Lastly, the implementation of Riparian Reserve limits of disturbance standards would further reduce impacts to these species. Therefore, potential impacts to these species would be small.

The project would not directly impact any coho salmon designated critical habitat associated with the Trinity River, Little Browns Creek, or Rush Creek.

Pacific Fisher (Candidate)

Two incidental sightings of the Pacific fisher were documented during the 2006 northern spotted owl surveys (**figure 3.2-1**). Both short- and long-term impacts could result from the alteration of suitable habitat within the project area. Construction activities, including the presence of the workforce and machinery, could result in short-term displacement of the Pacific fisher. However, most of the transmission line would be constructed adjacent to an existing road network that supports sporadic surface traffic. Since Pacific fishers tend to be rather shy and solitary, they generally avoid open areas associated with human activity and other disturbed areas. Since fishers have large home ranges, it would be expected that they would move to a different part of their range when disturbed. They also hunt exclusively in forested habitats, generally avoiding openings. Habitat loss and fragmentation are significant threats to fishers (USFWS 2004). Thus, the ROW would not be expected to be utilized by fishers. However, fishers are often associated with riparian areas. Therefore, ROW clearing impacts would be less of a concern, since riparian vegetation would be maintained to the extent practicable. The proposed action would not act as a barrier to Pacific fisher movement, as the existing transmission line corridor and existing network of roads have not precluded their use of the project area.

Table 3.2-6 details the impact of the 157 acres occupied within the 80-ft ROW of the project area on fisher home range. The project would cause a negligible impact to the home range of fishers, except for the female home range. The project could impact 10.3% of suitable habitat for a female home range. The habitat within the project area has not been classified or mapped for fishers. However, the habitat removal associated with the proposed action would have a long-term impact.

It has been determined that in the Pacific Northwest, habitat conservation measures proposed and implemented for the spotted owl and for riparian zones would generally be sufficient to prevent the extirpation of the Pacific fisher (USFS et al. 1993; FEMAT 1993; Thomas et al. 1993). Therefore, the proposed habitat conservation measures for Riparian Reserves and the general project specifications and conservation measures ensure that the proposed action would not contribute to the need for the species to become listed or result in a significant impact.

U.S. Forest Service and Bureau of Land Management Sensitive Species

Appendix C lists the USFS Region 5 sensitive species that might occur in the STNF; BLM special-status species (which include Federal threatened, endangered, proposed, and candidate species); State-listed species; and additional BLM sensitive species. A supporting analysis for each species is also provided in appendix C. Additional information for species that could potentially occur in the project area is summarized below. Western also prepared a Biological Evaluation for the species listed as sensitive by either the USFS or BLM that are known to occur in the project area (Western 2007). On the basis of the small footprint of the project, along with the timing of construction and the design criteria that were added to mitigate the impacts of the project on all biological species, it was concluded that the project might impact individual members of the sensitive species but would not likely lead to a trend toward Federal listing of any of the species.

Sensitive Wildlife Species

Of the species that are listed by the USFS and BLM, the Pacific fisher (previously analyzed as a federally listed candidate species), northern goshawk, and the foothill yellow-legged frog could occur in the project area. Implementation of the proposed action might adversely impact individuals, but it would not be likely to result in a loss that would cause a trend to Federal listing or a loss of species viability rangewide.

Table 3.2-6 Fisher Home Range Impacts by Habitat Classification within the Project Area 80-ft ROW

Habitat Classification	Habitat Acres Required to Support a Reproductive Unit of Fishers Including One Male and Two Females	Percent Impact by Proposed Action of 157 Acres Associated with Proposed 80-ft-Wide Corridor
High-capability habitat with 70% to 80% in mature, closed conifer forest	6,000	2.6
Moderate-capability habitat with 61% to 80% in mature, closed conifer forest	9,800	1.6
Low-capability habitat with 50% to 60% in mature, closed conifer forest	11,300	1.4
Northern California – male home range	6,228 – 14,348	1.1 – 2.5
Northern California – female home range	1,538 – 3,702	4.2 – 10.2

Sources: Freel (1991) and Zielinski et al. (1995) as cited in CBD (2000); Zielinski et al. (2004).

Northern Goshawk

Nesting habitat for the northern goshawk was identified near the project area on the basis of a historical nest location. Habitat modification due to construction would result in a long-term impact on the northern goshawk by removing nesting and/or roosting sites and by altering prey habitat. Short-term disturbance might result from construction activities along the transmission line corridor and use of access roads. The workforce and machinery required for transmission line construction could temporarily displace northern goshawks if they were present in the area. However, there are no known active northern goshawk occurrences within the project area, so displacement is not likely to occur.

Collision with the transmission line could also occur. However, the overall pole height correlated to tree height (i.e., in many areas the poles would be shorter than the taller trees) would minimize collisions. In addition, application of APLIC and USFWS (2005) guidelines for line marking and conductor layout would be implemented. The application of these measures would minimize collisions.

Northern goshawks might avoid areas of disturbance in response to the appearance and noise of helicopters and the presence and noise of people during construction, operation, maintenance, or monitoring activities. However, no northern goshawk nests are documented within the project area, and the transmission line aerial and ground activities would be periodic and not be likely to cause nest abandonment. If northern goshawk nests were located within or near the project area, appropriate buffers would be established. Construction and operation of the project would have a small impact on the northern goshawk.

Foothill Yellow-Legged Frog

The construction of the dams on the Trinity River altered river morphology, which resulted in a significant loss of breeding habitat for the foothill yellow-legged frog (Ashton et al. 1997). High-flow releases and artificially low water temperatures from the Lewiston Dam have also had adverse impacts on the frog (Lind et al. 1996). Other threats to the species include stream scouring, introduced predatory species such as the bullfrog (*Rana catesbeiana*), nonselective timber harvests, mining and road-related mass wasting events, and stabilization of historically fluctuating stream flows (Ashton et al. 1997; NatureServe 2007).

CNDDB records report the presence of the foothill yellow-legged frog species at one location within the project area (the Trinity River between the Lewiston Dam and the north fork of the Trinity River). While no individuals were observed during the 2005 or 2006 field surveys, the project area does contain suitable habitat for the frog.

The transmission line would span the majority of the streams, avoiding any direct impacts to stream channels. Five streams with culverts on the west end of the project area, north of the Weaverville Switchyard, would be avoided by the transmission line and crossed only by the existing access road. However, construction traffic would cross 32 intermittent and ephemeral streams, and access road improvements or construction would occur across 15 intermittent and ephemeral streams. Construction traffic through these crossings and access road improvements or a new road at the crossings could result in mortality to the foothill yellow-legged frog.

Although the project might affect individual frogs, the impacts would be small and would not likely result in a trend toward Federal listing or loss of viability for the foothill yellow-legged frog. Most crossings would be dry during the construction period, so frogs would not be present. In addition, the boundaries of disturbance distances designated for Riparian Reserves would further minimize the effects of the project on the frog.

Sensitive Plant Species

In 2006, a pedestrian survey of the USFS and BLM sensitive and special-status plant species was conducted by USFS botanists for the project area on Federal lands. The surveys did not find any individuals or populations of any listed sensitive or special-status species, including Forest Plan endemic plant species. However, the 2006 pedestrian botanical surveys were conducted outside the appropriate flowering period for the Scott mountain fawn lily (*Erythronium citrinum* var. *roderickii*). Habitat requirements for this species includes mixed conifer forest on ultramafic (serpentine) or other soils within an elevation ranging from 900 to 4,000 ft. Because there are no serpentine soils associated with the project area, it was concluded that the Scott mountain fawn lily does not occur in the project area. Therefore, the proposed action would not result in any direct, indirect, or cumulative impacts to USFS and BLM sensitive and special-status plant species.

Sensitive Fungi

Surveys were not performed within areas of suitable habitat for the branched collybia, *Cudonia monticola*, olive phaeocollybia, and stalked orange-peel fungus. Therefore, occupancy by the four fungi species was assumed, especially since suitable habitat for the four fungi on USFS lands might occur within the mixed conifer hardwood forest types. Fungi habitat occurs where species-specific host trees are found and where adequate amounts of leaf litter and organic debris are found in the understory. This forest type occurs along the existing 12-kV distribution line, but habitat affinity drops when the existing transmission line corridor enters the montane chaparral habitat east and north of the Trinity River Fish Hatchery. Suitable habitat occurs within the mixed conifer habitat in the existing transmission line ROW from proposed transmission pole 0/4 to pole 4/16 (Segment 1). However, slope aspect, canopy closure, moisture, and other conditions may limit the fungi species to sporadic locations within the general area of suitable habitat.

A direct impact to fungi would be the disruption of mycelial networks where machinery was used for tree removal and new spur road construction.

Because of the high degree and varying slope within Segment 1, helicopters would be used for delivering equipment, personnel, and project components to locations inaccessible by surface transportation vehicles. Most construction activities associated with the proposed action would avoid soil compaction within mixed conifer hardwood forest habitats. Some minor amounts of compaction or soil disturbance would be associated with tree cutting and yarding, but they would not be expected to result in significant mortality to the four fungi species. Work would be performed during the summer season (e.g., outside the wet soil season), eliminating the damage to aboveground fruiting bodies and lessening the possibility of increased soil compaction from construction activities on wet soils.

While the project might affect individual fungi, the impacts would be small and not likely to result in a trend toward Federal listing or loss of viability for branched collybia, *Cudonia monticola*, olive phaeocollybia, and stalked orange-peel fungus.

Summary of Wildlife Management Indicator Assemblage Analysis

The project might affect the five wildlife management indicator assemblages that are present in the project area: Late-Seral, Openings and Early Seral, Snag and Downed Logs, Riparian, and Hardwood. About 7.6 acres of Late-Seral assemblage habitat would become Openings and Early Seral assemblage habitat (**Table 3.2-7**). An additional 0.3 acre of this assemblage would be removed by new access road construction. Approximately 42.3 acres of forestland containing Snags and Downed Logs assemblage habitat would be cleared and maintained free of snags and large logs. Similarly, about 1.2 acres of Riparian assemblage habitat would be impacted to accommodate the increased ROW width. Rather than being eliminated, most of this habitat would be modified from mature to early seral stage vegetation. Approximately 11.9 acres of Hardwood assemblage habitat would be impacted and maintained in Openings and Early Seral assemblage habitat.

Table 3.2-7 Assemblage Habitat Shifts in the Proposed ROW (acres)

Current Assemblage Habitat	Predicted Assemblage Habitat Shift	Acres
Late-Seral	Openings and Early Seral	7.6
Late-Seral	Developed Land (Nonassemblage Habitat)	0.3
Snag and Downed Logs	Openings and Early Seral	42.3
Riparian	Openings and Early Seral	1.2
Hardwood	Openings and Early Seral	11.9

Although 31.8 acres of Openings and Early Seral assemblage habitat would be disturbed by clearing and tree removal for the wider ROWs, this acreage would remain in Openings and Early Seral assemblage habitat and would not affect habitat trends.

Forest-Level Effects to Management Indicator Assemblage Habitat

The following information was provided by the USFS to summarize forest-level shifts in assemblage habitat that are occurring over time. Habitat changes, in relation to the habitat assemblages, can be mapped out through the records of timber harvest and wildfire kept on the forest. **Table 3.2-8** details the forest-level shifts since 1991 due to harvest and wildfire.

Chaparral is not harvested, and even when it is burned, it is likely to grow back to chaparral. Generally, there is very little net change to chaparral types over short time periods. Aquatic areas and Cliffs, Caves, Talus, and Rock Outcrops are also unlikely to change over short time periods. Multihabitat is essentially the entire forest, since every assemblage is a part of the Multihabitat assemblage and will remain so even if it shifts categories. Therefore, Multihabitat does not change short of a shift in the forest boundaries. Snag and Downed Log habitat shifts with the composition of the forest (Beardsley and Warbington 1996). The greater value of larger trees in providing nesting cavities for a large variety of species justifies our assessment that a shift of forest structure from larger tree stems (size class three and above) to smaller stems (size class two and below) represents a net loss of snags (Hunter 1990; Raphael and White 1984). Some forest-disturbing events, such as a wildfire, can produce a large net gain in snags or downed logs for a period of time that would be taken advantage of by species such as the white-headed woodpecker.

Habitat shifts from later to earlier seral stages usually occur as a result of discrete events, such as a wildfire, harvest, pest kill, or other disturbing process. Since 1991, 121,650 acres have been

Table 3.2-8 Forest-Level Shifts in the Acres of Assemblage Habitat between 1991 and 2005

Assemblage	Amount of Assemblage Habitat in 1991 (acres)	Change in Acres due to Wildfire and Harvest since 1991 (acres)[a]	Amount of Assemblage Type Habitat Remaining from 1991 Amounts or Shifted to Early Seral (acres)
Late-Seral	741,850	–52,878	688,972
Openings and Early Seral	901,460	94,662	996,122
Multihabitat	2,411,656	0	2,411,656
Snags and Downed Logs	1,519,469	–104, 393	1,415,046
Riparian	6,047	–149	5,898
Aquatic	53,335	0	53,335
Hardwoods	190,909	–14,856	176,053
Chaparral	133,736	0	133,736
Cliffs, Caves, Talus, and Rock Outcrops	53,865	0	53,865

[a] Negative and positive shifts in habitat do not add to zero because some categories overlap (e.g., some of the forested areas are also hardwood areas).

modified by wildfires at the STNF. That amount represents about 5% of the total forest acreage of 2,411,656 acres. Since 1991, there have also been about 23,812 acres of timber harvest, which represents slightly less than 1% of the total forest acreage or about 1.5% of the 1,623,000 acres of the area forested with commercial conifers. The processes do not include the intermediate thinnings that would not shift forest type drastically away from the current category.

Assemblage Habitat Accrual Due to Forest Growth

However, habitat also undergoes succession, which adds to the volume of wood, the structural complexity of forests, and shifting of some forestlands from an early to a later seral stage of ecological succession. This slow accrual of wood and structure is routinely measured through sampling on the forest inventory and assessment plots placed on a continuous grid across the forest.

Size class 2 conifers range approximately from a 6-in. DBH to a 12-in. DBH. These are considered pole-sized trees. This is also generally considered the “stem exclusion stage” (DeGraaf and Miller 1996), where dense competing trees shade out the understory and create a depression in the general stand species diversity. In general, wildlife use the forests less in this stage (Hunter 1990) than in the stand initiation stages, where open growth provides forage and a diverse understory, or in Late-Seral stands, where gaps have begun to form, understory trees are crowded out, and greater species diversity returns to the stands (Oliver and Larson 1996). Size class 3 conifers range from about 13 to 24 in. DBH. Size class 3 conifers in the low-density S and P categories are still considered as part of the Openings and Early Seral Assemblage.

Stands where the average DBH transitions from an 11-in. or a 12-in. span to a 13- or 14-in. span, or stands have increased their density to 40% cover or above, have shifted from being part of the Openings and Early Seral growth assemblage to being part of the Late-Seral assemblage. Although growth can be highly variable due to differences in site quality and initial conditions, a seedling can grow to a 13-in. DBH conifer in this area within an average of 50 years (Powers 1999; Oliver and Powers 1978). If a reasonable distribution of size classes in the younger age classes is assumed, then in the 14-year period between 1991 and 2005, approximately 28% of the forest will have transitioned from an Openings and Early Seral stage assemblage habitat to a Late-Seral assemblage habitat

Roughly, if 28% of the 901,460 acres of Early Seral assemblage transitioned from Early Seral stages to a Late-Seral stage between 1991 and 2005, then approximately 252,409 acres of forest land transitioned from Openings and Early Seral assemblage habitat to Late-Seral assemblage habitat. Even if we assume that all wildfires occur in Late-Seral assemblage, which they do not, then the 145,462 of forest lands affected by wildfire and timber harvest represents about 1.7 times the amount of acreage shifted from Late-Seral to Early Seral during the same time period. This would indicate that this habitat is shifting to older size classes over time. **Table 3.2-8** details the approximate net shifts in Late-Seral and Early Seral habitat assemblages. The net result is a relative shift in habitat from Openings and Early Seral assemblage categories to Late-Seral assemblage habitats.

However, a shift from size class 2 to size class 3, although reasonably representing the assemblage habitat types, does not indicate an equal growth into old growth conditions. Forests grow faster in the early stages, and more trees will move from a size class 2 to a size class 3 faster than from a size class 3 to a 4 or a 4 to a 5. The net result is a large amount of forest cover in size class 3 stage.

Overall, although harvest and current levels of wildfire dramatically shift small acreages of affected stands to early seral habitat types, incremental growth on larger acreages of forest land shifts a little less than double the acreage into later seral conditions or categories. It is wise to keep in mind that some species are well adapted to take advantage of natural disturbances, such as wildfires, ice storms, windthrows, or even volcanic activity. These sudden events favor some species and disfavor others. The net balance of these processes produces an overall reduction in Openings and Early Seral habitat on the forest.

Trend Patterns

Since 1991, wildfires and timber harvesting reduced late-successional habitat from 741,850 acres to about 688,972 acres (about a 7.1% decrease). However, during the same time period, about 252,409 acres of size class 2 Openings and Early Seral assemblage grew into the size class 3 or Late-Seral assemblage type.

Management Indicator Assemblages

On the basis of the forestwide trend patterns as detailed above, the project-level habitat impacts would not alter or contribute to existing forestwide trends. These shifts, losses, and removals of habitat from the project would be very small in relation to forestwide trends and are well within the margin of error in measuring these patterns.

Survey and Manage Species

The project survey area for Survey and Manage plant and animal species was defined as all suitable habitat on Federal lands within the proposed 80-ft ROW segments and adjacent lands (habitat occurring next to the ROW segments) that might be impacted directly or indirectly by the project.

Survey and Manage Plant Species

Field surveys for all Survey and Manage plant species were conducted concurrent with 2006 sensitive plant surveys. No populations of the Survey and Manage species listed in **table 3.2-3** were found during 2006 field surveys. Therefore, it is not expected that any direct, indirect, or cumulative impacts would occur to these species. The project is in compliance with the 2001 Survey and Manage ROD (USDA and DOI 2001).

Survey and Manage Terrestrial Mollusk Species

No populations of the Survey and Manage mollusk species listed in **table 3.2-4** were found during the 2006 field surveys. Therefore, no direct, indirect, or cumulative impacts would be expected to occur to these species. The project is in compliance with the 2001 Survey and Manage ROD (USDA and DOI 2001).

Riparian Reserves

Riparian Reserve areas would be crossed by the project on forest lands. Some of these designated Riparian Reserves were previously disturbed by the 12-kV distribution line and existing access roads. The project may require thinning or removal of trees for conductor clearance in Riparian Reserves. These impacts would diminish over time as shrubs and low-growing trees filled in the ROW corridor. No other direct effects would occur to Riparian Reserves since no other aspects of the project would occur within the prescribed limits of disturbance. Since the project would follow the prescribed limits of disturbance within classified Riparian Reserves, construction of the project would have a small impact.

Aquatic Conservation Strategy

The ACS, an integral part of the Northwest Forest Plan, was developed to restore and maintain the ecological health of watersheds and the aquatic ecosystems contained within them on lands administered by the USFS and BLM (USFS and BLM 2003). The strategy was developed, in part, to protect salmon and steelhead habitat.

There are four major components of the ACS that provide the basis for protecting watershed health: Riparian Reserves, Key Watersheds, watershed analysis, and watershed restoration. Riparian Reserves are established to maintain hydrologic, geomorphic, and ecological processes. They also benefit riparian-dependent and associated species other than fish, enhance habitat conservation for species that depend on transitional zones between uplands and riparian areas, improve travel and dispersal corridors, and provide enhanced connectivity within and between watersheds. While they generally parallel perennial streams and rivers, they also occur at the margins of standing waters, intermittent streams, ephemeral ponds, and wetlands (USFS 2004a, 2005a). The Northwest Forest Plan established varying Riparian Reserve widths to meet ACS objectives for different types of water bodies (USFS 2004a, 2005a).

Key Watersheds were established to provide high-quality water and refugia for at-risk anadromous salmonids and resident fish species. Refugia that are selected include both high-quality and degraded habitats. The high-quality habitats serve as strongholds for the potential recovery of depressed stocks, while the selected degraded habitats have a high potential for restoration that could allow them to become future sources of high-quality habitats. Key Watersheds have the highest priority for watershed restoration, and they require watershed analysis before activities may occur in them (USFS and BLM 2003).

A watershed analysis is required for Key Watersheds, roadless areas in non-Key Watersheds, and Riparian Reserves prior to project decisions (except for minor activities) (USFS 2004a, 2005a). The purpose of a watershed analysis is to provide an information baseline to evaluate the existing conditions within a watershed in terms of the desired conditions. It is a systematic procedure that characterizes the human, aquatic, riparian, and terrestrial features, conditions, processes, and interactions within a watershed (USFS 2004a). The fifth level (watershed hydrologic unit) of the Hydrologic Unit Code, referred to as the fifth field watershed, is selected by the USFS and BLM as the proper scale at which to evaluate progress toward achieving ACS objectives. Individual projects are not expected to achieve all of the ACS objectives (USFS and BLM 2003). Watershed analyses for fifth field watersheds provide landscape-scale evaluations of watersheds that allow planning for future management of resources at a project-level scale (USFS 2005a). A watershed analysis enhances the ability to estimate direct, indirect, and cumulative effects of management activities on ACS objectives. It also helps to guide the general type, location, and sequence of appropriate management activities within the watershed (USFS 2004a).

Watershed restoration is an integral part of a program to aid in the recovery of fish habitat, riparian habitat, and water quality. It relies on watershed analysis and planning to identify restoration activities that have the highest likelihood of success. Restoration activities include (1) reducing sediment and improving flow regimes by decommissioning roads, through erosion control, and by upgrading culverts; (2) improving instream fish habitat complexity; (3) improving fish passage at road crossings; and (4) restoring riparian vegetation functions by planting, seeding, and thinning riparian areas (USFS 2004a, 2005a).

The Weaverville Watershed Analysis (USFS 2004a) and Upper Trinity River Watershed Analysis (USFS 2005b) include areas within which the project would be located. The Weaverville Watershed Analysis focused on an analysis of vegetation condition as it related to fuel loading, water quality, aquatic habitat, wildlife habitat, and soil productivity. The resource management issues addressed in the Upper Trinity River Watershed Analysis were vegetation management, fire protection and fuels management, and watershed condition (USFS 2005b). The primary water quality concern identified in the water analyses was sediment contributed primarily by timber harvest activities and roads (USFS 2004a, 2005b). High summer water temperatures in the Trinity River and lower reaches of its tributaries were also identified as a concern (USFS 2005b).

As evaluated elsewhere in sections 3.2, 3.4, and 3.12, localized impacts to streams, wetlands, riparian areas, and associated biota would range from negligible to minor. This would primarily be a result of the narrow linear design of the project, coupled with the extensive mitigation measures that would be employed to minimize impacts to soils, water resources, and biological resources. The proposed ROW segments would span several perennial streams (Trinity River, Rush Creek, and Little Browns Creek). Access roads would be constructed or improved across 15 intermittent and ephemeral streams.

The project would not have a long-term negative impact on riparian-dependent resources or ecological processes at the watershed scale. **Table 3.2-9** documents and summarizes how the project would meet or otherwise maintain ACS objectives.

3.2.2.4 Impacts from the No Action Alternative

Under the no action alternative, the existing 12-kV distribution line would remain in the existing ROW but would not be energized. Other actions and construction activities, with their associated adverse environmental effects, would be required to improve the electric system and provide reliable electric power in the area. Ongoing maintenance activities related to the existing transmission lines would have environmental effects, including the potential for bird collisions.

Table 3.2-9 ACS Objectives and the Proposed Action

Aquatic Conservation Strategy Objectives	How Proposed Action Meets or Maintains ACS Objectives
1. Maintain and restore the distribution, diversity, and complexity of watershed and landscape-scale features to ensure protection of the aquatic systems to which species, populations and communities are uniquely adapted.	The effect of project ROW segments on aquatic systems would be minor because of the small area that would be affected. The extensive number of mitigation measures that would be performed for the project would maintain the distribution and diversity of landscape features that influence aquatic systems in the Trinity River, Rush Creek, Little Browns Creek, and other bodies of water that would be spanned by the transmission line or located close to where access roads would be constructed or improved. On a landscape scale, the protection of Late Successional Reserves and Riparian Reserves would provide a high level of protection from ground-disturbing activities for aquatic species and their habitats. The project's access road improvements (e.g., placing rocks on the access crossings of streams) would decrease the risk of existing sedimentation to streams and would help accelerate recovery of aquatic habitats relative to existing conditions. The project would not degrade the composition of the stream substrate because of the project design features and planning that would include protection of riparian buffers. Large wood is important for aquatic habitat complexity. Existing levels of instream, large, woody debris would be maintained by the project. Large woody debris recruitment potential would be maintained by protection of Riparian Reserves and retention of some woody debris caused by clearing.
2. Maintain and restore spatial and temporal connectivity within and between watersheds.	ROW clearing in the Riparian Reserves would be highly unlikely to cause any degradation of connectivity or increase landscape fragmentation because the ROW would be narrow (80 ft) and because only a small area of Riparian Reserves would be cleared. No new access roads would be constructed in Riparian Reserves that could degrade connectivity for aquatic or riparian-dependent species. As a result of the project design features and protection of Riparian Reserves, the project would maintain riparian and floodplain connectivity with streams. Mitigation measures (e.g., not stockpiling or depositing excavated materials near streambanks, locating structures and access roads outside designated floodplains to the extent practicable, using drainage and sediment control structures) would limit the delivery of sediments to aquatic habitats and limit any wetland or riparian degradation. No instream obstructions are proposed. The 80-ft-wide ROW would not affect the habitat quality of headwater areas; these areas would continue to provide unobstructed routes for delivery of watershed products to downstream areas critical to the life history stages of aquatic species.

Table 3.2-9 (Cont.)

Aquatic Conservation Strategy Objectives	How Proposed Action Meets or Maintains ACS Objectives
3. Maintain and restore the physical integrity of the aquatic system, including shorelines, banks, and bottom configurations.	The proposed action would not adversely affect the physical integrity of the aquatic systems because residual vegetation within the ROW would maintain root strength; uncleared or minimally cleared buffers would ensure that ROW clearing would not affect streambank integrity; and management actions throughout the project area would not cause any alterations in water flows that could affect channel morphology. The project would maintain the current physical integrity of aquatic systems by prohibiting disturbances near streams, except for activities needed to improve access roads, such as road rocking. Adding rocks to stream crossings could decrease sediment dispersion.
4. Maintain and restore water quality necessary to support healthy riparian, aquatic, and wetland ecosystems.	Mitigation measures required for the project would minimize sediment inputs and thermal loading to streams. The minimal change to the existing canopy closure would maintain existing stream temperature conditions. The integrity of Riparian Reserves would be maintained, along with key functions such as sediment control and filtering and input of large woody debris. No detectable change in water quality, relative to pre-project conditions, would occur. Spills of toxic materials (e.g., oil, gas, or herbicides) into stream channels would be unlikely. Water quality necessary to support healthy riparian, aquatic, and wetland ecosystems is maintained at the fifth field watershed scale. Some sediment could result from ROW clearing and from access road construction or improvements. However, the amount would be negligible and discounted because of the limited duration, scope, and intensity of the proposed action, coupled with the mitigation measures that would be utilized to minimize erosion and sedimentation.
5. Maintain and restore the sediment regime under which aquatic ecosystems evolved.	The project would not significantly alter the fine sediment regime in the project area or downstream. It would reduce road-related erosion through placement of rocks in access road stream crossings. Large woody debris and recruitment potential would be maintained; thus, sediment storage capability relative to large wood would be maintained. Clearing of the ROW would increase soil disturbance in localized areas. Implementation of mitigation measures in the erosion and sedimentation control plan and adherence to Forest Plan soil cover guidelines would minimize off-site sediment movement towards streams.
6. Maintain and restore in-stream flows sufficient to create and sustain riparian, aquatic, and wetland habitats and to retain patterns of sediment, nutrient, and wood routing.	No activities that would alter or divert stream flows are proposed. The scope of the project indicates that any change in runoff would be undetectable. There would be no detectable changes to peak flows or low flows as a result of the project.
7. Maintain and restore the timing, variability, and duration of floodplain inundation and water table elevation in meadows and wetlands.	The project would have no effect on groundwater tables or floodplains. Also, there would be no effect on the functional status of wetlands.

Table 3.2-9 (Cont.)

Aquatic Conservation Strategy Objectives	How Proposed Action Meets or Maintains ACS Objectives
8. Maintain and restore the species composition and structural diversity of plant communities in riparian areas and wetlands to (1) provide adequate summer and winter thermal regulation, nutrient filtering, appropriate rates of surface erosion, bank erosion, and channel migration and (2) supply amounts and distributions of coarse woody debris sufficient to sustain physical complexity and stability.	ROW clearing would cause at least a partial reduction in canopy closure at some stream crossings, which could result in some microclimatic alteration or other adverse effects for species that prefer complete canopy closure or do not tolerate disturbance. Any such effects would be minor and localized because the ROW would be narrow, residual trees and other vegetation would provide shading, and extensive riparian areas would not be affected by the project. The project would not affect thermal regulation, nutrient filtering, bank erosion, channel migration, or large woody debris, since the integrity of Riparian Reserves would be maintained, some large woody debris generated by clearing activities would be left, and actions would not alter any riparian functions.
9. Maintain and restore habitat to support well-distributed populations of native plant, invertebrate, and vertebrate riparian-dependent species.	The project would not affect habitat such that well-distributed populations of native riparian-dependent biota could not be maintained. Existing habitat would be protected by Riparian Reserves, project design features, and proposed mitigation measures.

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3.3 CULTURAL RESOURCES

3.3.1 Affected Environment

Cultural resources include archaeological, historic, or architectural sites, structures, or places from the past. They also include traditional cultural properties (TCPs), that is, properties that are important to a community's practices and beliefs and that are necessary for maintaining the community's cultural identity.

3.3.1.1 Resource Study Area

Area of Potential Effects

The resource study area for assessing impacts on cultural resources is considered the area of potential effects (APE), as defined by regulations. The 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" (36 CFR 800.16[d]). Direct effects could result from any ground-altering activities or vehicle traffic. Indirect effects could include visual and noise intrusions that would diminish the historic or aesthetic values of certain cultural resources. The area that could be indirectly impacted is larger than the one that could be directly impacted. The area of potential indirect effects extends up to 2 mi from the existing 12-kV transmission line ROW and 3 mi from the new transmission line ROW. The area of potential direct effects is a 100-ft-wide ROW corridor where ground-disturbing activities could occur, a 50-ft ROW for existing and proposed new access roads, construction staging areas, four 200-ft-diameter and two 300-ft-diameter helicopter staging areas, pull sites, and an area with a radius that is up to 120 ft out from the centerline of the ROW for guy-wire installations. The APE is also considered the footprint of the proposed 500 × 500 ft Weaverville Switchyard and two short distribution lines.

A total of 111 pole structures would require guy wires for stabilization. Of these, 100 would be single poles and 11 would be three-pole structures. The radius needed for the guy wire (including a 5-ft buffer around the guy anchor) would vary from 50 to 120 ft from the ROW centerline. Where the guy angle was less than five degrees, the guy anchor would be within the 80-ft-wide ROW when the structure was a single-pole ST-1 structure. Thirty-one of the single-pole ST-1 structures would have a guy angle of less than five degrees, so these would have anchors (and the 5-ft buffer) within the ROW. The remaining 80 structures would have guy anchors outside the ROW. The bulk of these (approximately 87%), including the buffer, would be 40 ft or less outside the ROW.

The APE also includes 43 pull (tensioning) site locations that are outside the ROW. The pull site locations measure 50 × 200 ft and are located at three-pole locations, end structures, and corner locations.

Methodology

Methods used to identify the presence of cultural resources and to determine the eligibility of resources for listing in the NRHP vary between those in the direct and indirect APE. Archival research of previous written records helps identify historic resources or possible traditional cultural properties (TCPs). This is the primary method used for determining what resources are in the indirect APE. Pedestrian surveys are used to locate prehistoric and historic resources. Excavations or in-depth architectural recordings are required to evaluate if a property in the direct APE is eligible for listing on the NRHP. Native American tribes or other cultural groups are consulted to identify TCPs, traditional use areas, and religious resources within the project area. Consultation sometimes includes meetings with traditional religious practitioners, interviews with knowledgeable individuals, and site visits to particular areas of concern.

Western completed a records search to determine if any cultural resources had been identified within 2 mi of the existing Trinity PUD 12-kV distribution line ROW and within 3 mi of the proposed transmission line ROW centerline. The research was conducted at the Northeast Information Center of the California Historical Resource Information System, California State University at Chico. The STNF and the BLM Redding Field Office records were also reviewed, as well as General Land Office (GLO) maps. The Trinity County Planning Office was contacted to determine if a county-maintained list of historic sites was available. Trinity County does not have a list of historic sites in the region. The Jake Jackson Museum and History Center in Weaverville does keep a list of historic sites, and the museum was consulted concerning properties of interest.

Western consulted with the California Native American Heritage Commission (NAHC) on appropriate Native American contacts for the project study area. In consultation with the NAHC, Western consulted with two Federally recognized Tribes beginning in 2005: the Redding Rancheria and the Hoopa Valley Indian Reservation. The ancestral lands of the Hoopa Valley Indian Reservation are considered outside the project area, but the Tribe was initially included in consultation because of its historical interest in the Trinity River. In addition, Western consulted with non-Federally recognized Tribes that might have an interest or additional knowledge regarding properties of religious or cultural significance. These included the Nor-Rel-Muk Nation and the Wintu Educational and Cultural Council. Western has continued to keep the Tribes informed through the National Environmental Policy Act (NEPA) process. Tribes were provided with copies of the draft EIS documents and notifications for public scoping meetings held in Redding and Weaverville in 2006. One member of the Nor-Rel-Muk Nation attended the public scoping meeting in Weaverville and provided some information regarding potentially sensitive areas. Western has also discussed the project with the Chairperson of the Nor-Rel-Muk Nation, who expressed an active interest in the project. Western has not received a response to consultation letters or phone messages from any other Tribes regarding this project.

3.3.1.2 Issues of Environmental Concern

Cultural resources have an important role in connecting all contemporary societies to their heritage and traditions, thereby providing structure and perspective for contemporary life. Even though evidence of the past may be documented or reconstructed to some degree, these resources, once damaged or destroyed, are essentially nonrenewable.

The following laws, regulations, and Executive Orders (EOs) mandate specific cultural resource requirements or restraints that could be applicable to the alternatives analyzed in the EIS.

- NHPA of 1966, as amended (16 *United States Code* [U.S.C.] § 470) and implementing regulations (36 CFR part 800);
- Native American Graves Protection and Repatriation Act (NAGPRA) of 1990 (25 U.S.C. § 3001 et seq.) and implementing regulations (43 CFR part 10);
- American Indian Religious Freedom Act (AIRFA) of 1978 (42 U.S.C. § 1996);
- Archaeological Resources Protection Act (ARPA) of 1979 (16 U.S.C. § 470 aa-mm as amended, and implementing regulations at 43 CFR part 7); and
- EO 13007, Indian Sacred Sites, May 24, 1996, 61 FR 26771–2 (1996).

For this EIS, cultural resource information has been organized into five categories: prehistoric period, contact period, historic period, cultural resources in the project area, and TCPs. A cultural resource can fall into more than one cultural period because it was used for a long period or for multiple functions.

3.3.1.3 Characterization

Prehistoric Period

The oldest known occupied prehistoric site in the region is a site on Squaw Creek in nearby Shasta County, with a radiocarbon date of approximately 6,500 years before the present (B.P.), although it could be as old as 8,000 years B.P. (Reinoehl 2005). Material culture included the presence of wide-stemmed projectile points, with milling stones rare in earlier deposits but with increased evidence of milling stones later. Milling stones are evidence of plants being used as food. Projectile point types similar in appearance to North Coast Range styles that date to 6,000 and 2,000 years B.P. are also found at the site (Reinoehl 2005).

Native people lived in the region that contains the project area at least 6,000 years ago. The most recent Native American people who inhabited this region were known as the Wintu or Wintun (Kroeber 1925; LaPena 1978). Wintu territory included much of four existing counties in northern California: Trinity, Shasta, Siskiyou, and Tehama Counties. Generally, the territory ranged from the south fork of the Trinity River on the west to Little Cow Creek on the east, and from Cottonwood Creek on the south to the headwaters of the east fork of the Trinity River to the north. Present-day communities in this area include Weaverville, Hayfork, French Gulch, McCloud, Stillwater, Keswick, Baldhill, and Upper Trinity (LaPena 1978).

Wintu material culture included the use of bark houses in settlements of 20 to 150 people. Kroeber (1925) identifies 60 sites known to have been inhabited by the Wintu. Houses were typically circular and subterranean, with a center pole for entry and exit and for use as a smoke hole for the central fire. Other items of material culture included the use of basketry, items for fishing in streams (projectile points, fishing nets, and fishing harpoons), bow and arrow technology for hunting, and slings made of buckskin and sinew cord. Gathering of native plants was also extensively practiced; plant use included the traditional use of acorns, manzanita berries, pine nuts, and other vegetal foods for a variety of subsistence purposes (LaPena 1978).

The Wintu population before contact with Whites was approximately 12,000 to 14,250 (Kroeber 1925; LaPena 1978). LaPena (1978) estimates that fewer than 400 Wintu survived in the year 1910, with a 1971 estimate of about 900 individuals still living.

Contact Period

The effects of White contact upon the Wintu way of life and other historic contact issues were devastating to the Native population. The first non-Native persons to leave records of exploration of the northern California region were Jedediah Strong Smith and Peter Skene Ogden, both of whom entered the Sacramento Valley in the late 1820s. Smith's second trip in California on his way to Oregon took him very close to the project area. Fur trapping became prominent in the area in the 1830s, after expeditions to the area from the north. Trappers brought with them nonindigenous diseases, and in the early 1830s a malaria epidemic hit the region. One estimate is that the epidemic affected about 75% of the population of the region (LaPena 1978).

In the late 1840s, a Mexican land grant was obtained by Pearson B. Reading in the upper Sacramento River Valley. Reading brought domesticated cattle and sheep to the area. The introduction of animal herding significantly affected many of the food resources used by the Wintu and other Native Americans. But the most significant effect on Native Americans and their environment came in the form of the California gold rush in the late 1840s, when huge groups of people rushed into the area and used all methods possible for extracting gold from rivers, creeks, and underground sources. This occurred throughout northern and north-central California, where towns were started and died over very short periods of time or persisted if the gold mining was profitable for the miners (LaPena 1978).

When gold was discovered near Douglas City in 1848, many miners flocked to the region in an attempt to strike it rich. Mining and associated activities resulted in enormous disruption to the natural environment and to the Native inhabitants of the region. The non-Native population increased tremendously as miners, merchants, and farmers saw the need for their services in areas previously not farmed. By 1850, Shasta County and Trinity County were created when California became a State (LaPena 1978).

In the 1850s, the Wintu were subjected to the Cottonwood Treaty, which allotted them about 35 mi^2 of land. However, the treaty was neither honored nor ratified by either side. As more and more White explorers came to settle in the region, more and more Natives were either pushed out or removed to other areas. Indians were killed, and villages in Hayfork along the Trinity River were burned to the ground. Battles and skirmishes continued between the Native population and the encroaching White settlers. The "Wintoon War" between the Indians and White settlers lasted 6 months between 1858 and 1859, killing 100 Indians and sending 300 to the Mendocino Reservation.

In 1864, the Hoopa Valley Indian Reservation was authorized. It created an Indian agency and a school, provided medical care, and gave the Natives the right to the Hoopa Valley and nearby hills. However, living conditions on the reservation remained poor, and many Native people continued to die until very few individuals remained (Tsnungwe Tribe 2005). The completion of the railroad in 1875 and subsequent actions by non-Native people, such as mining, farming, and destruction of the natural environment, brought about almost the total demise of the Wintu people (LaPena 1978). However, Wintu continue to live in their traditional areas. Local Wintu organizations include the Redding Rancheria, the Local Indians for Education Center, the Hayfork Band of Nor-El-Muk, the Wintu Tribe of Northern California, and the Toyon Wintu Center.

Historic Period

Trinity County was one of the original 27 counties created by the State legislature and, at the time of statehood, included a portion of present-day Siskiyou County and all of Humboldt and Del Norte Counties. The Trinity County seat of Weaverville was one of the largest towns in California. The community of Weaverville is near the western terminus of the project route.

As stated above, the discovery of gold in northern California fundamentally changed life in the region of Trinity County. Gold mining required large quantities of water that were usually available in the numerous streams and rivers in this area. Ditches were constructed, and pipelines were used to bring water from the streams to the gold mining locations. Hydraulic mining was used in areas where gold was found in small amounts. It involved washing the dirt with water to extract the gold more easily. However, hydraulic mining had a significant toll on the natural environment because the methods used were destructive. Water diverted into ditches and wooden flumes was channeled into high-pressure hoses, which were then forced into a hillside or mountainside suspected to contain gold, causing the soil to erode and the resultant gravels to be forced into sluice bins, which captured the gold. Although this was a very efficient method of extracting gold, the devastation to the environment was overwhelming. Once the gold was extracted, the sluice boxes were then dumped back into the nearest creek, leaving massive amounts of debris to flow back into the rivers and streams (Caltrans 2004).

Although hydraulic mining was banned in California in 1884, the La Grange Mine, located west of Weaverville, and surrounding mining areas of Trinity County continued using this method because the debris flowed out to the ocean rather than being confined to a stream and valley areas that flowed to inland areas. Extensive complexes of ditches were constructed in the region to bring water to where the active mining locations existed. This method is typical of the mining that occurred in this area (Caltrans 2004).

The community of Weaverville also got its start as a result of gold mining. Initially, early settlers built where they pleased. Main Street was subsequently laid out, and, in time, passenger and freight trains operated between the communities of Weaverville and Shasta. By 1851, the community of Weaverville had its own post office. A school, hospital, and churches were constructed shortly thereafter. Many of the brick buildings constructed during this time remain today along the town’s main street. The officially named town of Weaverville was created in 1876 by Judge T.E. Jones.

In the 1850s and the 1860s, mining first took place near Weaverville. Many of the miners were of Chinese ancestry and were hired to help work in the mines (Jones et al. 1981). Because of the lack of a consistent water supply, hydraulic mining seasons were short. Farming and raising livestock began to assume importance, as did the creation of sawmills for construction-related needs. Quartz mining was important during the 1880s, and by the early 1890s electricity came to town (Jones et al. 1981). Mining continued sporadically until World War II, but not to the degree to which early mining was conducted. Development in Trinity County continued because of the promise of farming and the rural atmosphere of the area.

In the late 1950s and early 1960s, Trinity County was rediscovered, this time because of the need for water storage reservoirs in northern California. Parts of the Trinity Valley were inundated with water once Trinity Dam was constructed in 1962, covering over Trinity Centre, Stringtown, and other ranches and historic sites in the region. Another dam and reservoir were constructed in nearby Lewiston in 1963, and water was diverted from the Trinity River, reducing local water flows considerably in the area. While construction of the dams was a boon to the local economy, once construction was completed, many jobs disappeared and the local economy suffered (Jones et al. 1981).

Cultural Resources in the Project Area

Record searches conducted for both the direct and indirect APE as defined in section 3.3.1.1 revealed that 19 cultural resource surveys were previously conducted in the project area and 157 cultural resource sites were identified. Approximately 17% of the sites are Native American sites or have Native American components, while 83% are related to the historic period of Trinity County. GLO maps from 1876, 1881, and 1927 were examined, and historic features noted on the maps were identified for purposes of this study. Only 16 historic era sites, 2 electrical power lines, 1 residential complex, and 2 isolated features have been identified within the project's area of direct effects. The remaining sites are located well outside the project's area of potential direct effects and are considered to be within the project's indirect APE. The records search identified the majority of these previously recorded sites as historic era sites; only a very low percentage are related to the prehistoric period. The preponderance of historic sites are the remains of mining ditches, flume lines, trails, cabins, roads, pole lines, mine adits, mining camps, historic artifacts, rock waste piles or tailings, mills, mill ponds, prospect pits, house foundations, and scattered mining equipment. Previously recorded prehistoric sites are primarily identified as villages, with one Wintu cemetery noted 2 mi outside the direct APE, as well as bedrock milling areas associated with processing locally available plant resources.

For historic era or prehistoric sites currently determined eligible for listing in the NRHP, either individually or as a historic district, research was conducted in both the NRHP and the *California Register of Historical Resources.* Three districts — the Lewiston Historic District, Weaverville Historic District, and West Weaver Creek Mining Landscape District (WWCMLD) — are within the indirect APE of the project. Potential indirect effects include visual and noise intrusions that could diminish the historic or aesthetic values of certain types of sites. These types of sites are historic-era standing structures, TCPs, and historic landscapes. There are no historic-era standing structures within the view shed of the proposed transmission line. Consultation with affected tribes and a records check did not reveal any TCPs. The WWCMLD is the type of site that could be indirectly affected by visual aspects of the transmission line. However, the WWCMLD's significance is a result of the complexity and extent of the physical remains on its landscape, not its visual appearance. The pattern of diggings found in the WWCMLD contributes to an understanding of the complexity of local mining systems; the remains represent a microcosm of the regional development of mining within the history of mining in northern California. Therefore, the integrity of this landscape type would not be compromised by the visual presence of the proposed transmission line.

It is expected that the majority of the sites to be found in this area would be connected with gold mining. It is expected that mining-associated uses, such as the remains of ditches or sluice boxes, water lines, miners' camps and living areas, tool sheds, barns, stables, and individual homesteads, would be found. Artifacts associated with these uses, such as metal debris used in the mining process, rock walls constructed to shore up ditches and sluice boxes, and everyday-living artifacts, such as pieces of ceramics, glass, metal, and wood, are also anticipated.

An intensive pedestrian cultural resource survey of the existing transmission line and a small portion of the proposed line was conducted by Western in June and August 2005. A second intensive pedestrian survey of the remainder of the proposed transmission line ROW, existing and proposed access roads, helicopter staging areas, and switchyard and tie-ins was conducted in July 2006. The two surveys recorded 16 historic era sites, 2 historic era structures, 1 residential complex, and 2 isolated historic era features. The 21 historic era resources consisted of 3 areas of ditches and reservoirs, 2 mines, portions of 4 previously documented mining ditches (CA-Tri-1762H, CA-Tri-843H, CA-Tri-1433H, and CA-Tri-1399H), 1 complex of small ditches near Lewiston Dam, 2 ditch segments, 1 previously recorded segment of old Highway 299 (CA-Tri-1356H), 3 small sluicing areas, 1 electrical transmission line, 1 electrical distribution line, 1 residential complex, 1 isolated prospect pit, and several pieces of isolated riveted iron pipe (**table 3.3-1**). Areas to be used for some of the equipment staging will not be known until after the construction project is awarded. Those areas will be surveyed for cultural resources when identified.

Of the 21 cultural resources identified in the 2005 and 2006 surveys of the ROW, 7 are considered potentially eligible for the NRHP. The remaining 14 do not appear to meet the eligibility criteria for listing on the NRHP. The 7 potentially eligible resources relate to placer mining activities that likely took place in the late nineteenth century. Trinity PUD-6 has the remains of a unique type of placer mining in the region. AG-Trinity PUD-8 is an area of extensive mining activity that is probably associated with multiple mining endeavors. Sites Trinity PUD-3, Trinity PUD-8, and AG-Trinity PUD-1 represent significant mining activities in the project ROW. The last two sites, AG-Trinity PUD-6 and AG-Trinity PUD-7, are ditch and reservoir sites whose association with particular mining activities is unknown. These sites would likely be contributing components if they were associated with significant mining activities. The portion of the Union Hill Ditch (CA-Tri-1399H) crossing through the project area is in poor to fair condition, but there are enough remnants to reconstruct its general size and form and its route through the project area. Modern Highway 3/299 (CA-Tri-1356H) and a small number of other developments in the area intrude on the historic setting of the mining ditch. This segment may not support the eligibility of the larger linear resource.

In consultation with the California SHPO, Western has developed a programmatic agreement (PA) pursuant to 36 CFR part 800, the implementing regulations for compliance with section 106 of the NHPA, to satisfy Western's obligations under section 106. The PA stipulates the process

Table 3.3-1 Cultural Resources in Project Direct APE

Temporary Field No. or Site No.	Site Description	Comments
Trinity PUD-1	Ditch and reservoir system	Mostly outside area of impact, some previous impact, linear resource
Trinity PUD-2 CA-Tri-1762H	Mining ditch	Mostly outside area of impact
Trinity PUD-3	Sluice mining complex	Some previous impact, linear resource, impacts could be avoided
Trinity PUD-4	Sluice mining complex and historic road	Mostly outside area of impact
Trinity PUD-5	Mining ditch	Some previous impact, linear resource
Trinity PUD-6	Ditch complex	Mostly outside area of impact, some previous impact, linear resource, direct impacts from project
Trinity PUD-7	Ditch	Heavily disturbed in area of impact
Trinity PUD-8	Ditch and workings	One of the three portions of this site would be within the arc of impact
T-L 12-kV distribution line	Electrical distribution system	Less than 45 years old, would be replaced with proposed 60-kV line
Bungalow	Residence and outbuildings	Adjacent to switchyard
IS-Trinity PUD-1	Riveted iron pipe	Isolated material, possible reuse
AG Trinity PUD-1	Small sluice operation	Mostly outside area of impact, some previous impact
AG Trinity PUD-2	Small sluice area	Small area, poor condition
AG Trinity PUD-3	Ditch segment	Mostly outside area of impact, linear resource
CA-Tri-843H (AG Trinity PUD-4)	Earthen ditch	Brown's Mountain ditch and flume, mostly outside area of impact, some previous impact, linear resource
CA-Tri-1433H (AG Trinity PUD-5)	Historic ditch, riveted pipe segments	Possibly Rush Creek Ditch, poor condition, mostly outside area of impact, some previous impact, linear resource
AG Trinity PUD-6	Historic reservoir and ditches	Mostly outside area of impact, some previous impact
AG Trinity PUD-7	Historic ditches	Mostly outside area of impact, some previous impact
AG Trinity PUD-8	Historic sluicing area	Covers large area of switchyard survey block, some previous impact, direct impacts expected
CA-Tri-1399H, crosses AG Trinity PUD-8	Historic ditch	Possibly Union Hill Ditch, segments in APE are discontinuous with some past damage, linear resource
CA-Tri-1356H	Historic highway	Old Highway 299 at switchyard
PG&E 60-kV T-line	Electrical transmission line	Line would loop through proposed switchyard
IF-JT-1	Historic prospect pit	Isolated feature, unknown age

and procedures Western would follow before the project begins to identify all areas not yet identified that might be affected by project activities. As the lead agency for section 106 compliance, Western has invited USFS, BLM, Reclamation, and USACE to be signatories on the PA. The PA requires that Western — in consultation with the SHPO, USFS, BLM, Reclamation, USACE, and affected tribes — make a reasonable and good faith effort to identify historic properties that could be affected by project-related activities. Western — in consultation with the SHPO, USFS, BLM, USACE, Reclamation, and affected tribes — is to determine which historic properties meet the eligibility criteria for listing in the NRHP and implement mitigation measures to avoid or lessen any adverse effects to such properties. The PA would be signed with

SHPO and other signatories prior to the ROD and would satisfy Western's requirements under section 106.

Traditional Cultural Properties

TCPs are places associated with the cultural beliefs, practices, or ceremonies of a living community. These sites are important in maintaining cultural identity. The study area has been occupied or used for at least 6,500 years by Native American and Euro-American cultures. The relationships between these cultures and their surroundings may have resulted in the attachment of traditional, spiritual, or religious aspects to various natural and cultural features. Religious resources, such as sacred areas or places, are needed for the practice of a religion. These resources have attained a position in the religious or spiritual history and activities of the community and are a part of that particular culture's spiritual survival. Very often religious resources are also considered TCPs. Although Western will continue to consult and update tribes throughout the Project, no TCPs or other concerns have been raised by the tribes.

3.3.2 Environmental Consequences

Under the proposed action, significant adverse impacts to cultural resources could occur. Potential impacts could result from removal, construction, and maintenance of the transmission line. The construction of new transmission lines would likely have more extensive impacts than would removal. The construction of new access roads would have the highest potential for impacts to archaeological resources. Augering new holes for transmission line structures would have the next largest impact. Where possible, transmission line structures and access roads would be sited to avoid known cultural resources. Pulling locations, splice points, and staging areas would be selected to avoid cultural resources. Erosion control methods could include recontouring, reseeding, and other minor surface disturbance; these could have adverse impacts on cultural resources as well. Two of the sites identified (Trinity PUD-6 and AG-Trinity PUD-8) would be directly impacted by the project. Site Trinity PUD-6 would be directly affected by road improvement and construction of the transmission line. Construction of the Weaverville Switchyard would directly affect site AG-Trinity PUD-8. It appears that sites Trinity PUD-3, Trinity PUD-8, and AG-Trinity PUD-1 could be largely avoided if there was proper planning (string lines over the sites, only pass through the sites, etc.). Sites AG-Trinity PUD-6 and AG-Trinity PUD-7 would be directly affected by project activities.

The 12-kV distribution line slated for removal was built in the early 1960s. The distribution line does not appear to meet the minimum criteria for eligibility or any of the criteria considerations (36 CFR 60.4). Removal of the existing 12-kV transmission line could have potential impacts to archaeological resources from pulling or digging out distribution line structures or dropping and dragging conductor lines. Structures identified for removal will be cut off at ground level rather than below ground surface to minimize ground disturbance.

Avoiding cultural resources is Western's standard practice. Other EPMs, discussed below, address many of these issues.

3.3.2.1 Standards of Significance

The laws, ordinances, and regulations discussed above deal with impacts to cultural resources. In nearly every case, cultural resources must meet some set of criteria for significance before agencies direct efforts to preserve the values that these resources represent. Under the NHPA and the regulations at 36 CFR part 800, historical or prehistoric sites, objects, or features, or architectural resources determined "significant" by a Federal agency, need to be considered for potential impacts. The significance of any cultural resource is evaluated by using the criteria for eligibility for nomination to the NRHP, as defined in 36 CFR 60.4. The NRHP regulations state:

> "The quality of significance in American history, architecture, archeology, and culture is present in districts, sites, building(s), structures, and objects of State and local importance that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and
>
> (a) that are associated with events that have made a significant contribution to the broad patterns of our history; or
>
> (b) that are associated with the lives of persons significant in our past; or
>
> (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
>
> (d) that have yielded, or may be likely to yield, information important to history or prehistory."

If resources are determined to be eligible for listing in the NRHP, and the SHPO concurs with the agency's determination, these resources are then considered significant, and the agency must avoid or lessen the impacts to them by the proposed action. Indian tribes, State and local agencies, the public, and the ACHP are given opportunities to influence how those resources are treated. Sites within California eligible for the NRHP are also eligible for the California Register of Historical Resources. Project-related impacts to an eligible cultural resource site that would adversely affect the values of the resource, making it eligible for inclusion in the NRHP, would be considered significant.

3.3.2.2 Environmental Protection Measures

In accordance with the stipulations of the PA, specific measures would be developed and implemented to avoid and minimize identified adverse impacts. These measures could include project modifications to avoid adverse impacts, construction monitoring activities, procedures for handling the discovery of cultural resources during construction, and data recovery studies. Any unknown cultural resources or human remains discovered during the course of construction would be protected, evaluated, and treated in accordance with the EPMs for cultural resources. Western would instruct construction crews that cultural resources might be present in the study area. They would be trained to stop work within 100 ft of any discovery, and notify Western's regional environmental manager, who would confirm that the resource was evaluated and recorded by a professional archaeologist.

EPMs for cultural resources from **table 2-3** include the following:

- Before construction, all supervisory construction personnel would be instructed on the types of resources (cultural, paleontological, and ecological) that might require protection and on the location of known sensitive areas. To assist in this effort, the construction contract would address Federal, State, and tribal laws regarding antiquities, fossils, plants, and wildlife, covering their collection and removal, and the importance of these resources and the purpose and necessity of protecting them.

- Western would conduct on-site cultural resource awareness training for all construction and field personnel. All field personnel would be required to stop work within 100 ft of any inadvertent discovery and immediately notify Western's environmental manager. Western would have a qualified archaeologist who met the Secretary of the Interior's standards come out to evaluate and assess the find in consultation with the SHPO and local tribes if the site was prehistoric in nature. Significant cultural resources in the area would be delineated in the field and avoided.

- Where ground-disturbing activities were identified, construction activities would avoid all historic properties, or a special use permit or mitigation plan would be developed in consultation with the SHPO.

- Irrigation system features that are eligible for the NRHP would be avoided during the siting of new transmission line structures and access roads, and most other irrigation system features would be avoided to the extent practicable in siting new structures and access roads.

3.3.2.3 Impacts from the Proposed Action

All sites previously recorded or identified during the survey along the various segments are historic era. The EPMs summarized in section 3.3.2.2 are expected to avoid or minimize the magnitude of cultural resource impacts. Therefore, significant impacts are not expected.

Segment 1 "Existing Corridor"

The impacts from expanding the existing Trinity PUD 12-kV distribution line ROW from 20 ft to 80 ft to accommodate the installation of a new 60-kV transmission line could include damage to sites as a result of ground disturbance. The existing Trinity PUD 12-kV distribution line would be removed. This line does not appear to meet the eligibility criteria for listing in the NRHP, and no mitigation measures are required. None of the proposed structures have been staked in areas of known archaeological cultural resources. Construction and maintenance of Segment 1 would continue to utilize existing access roads for the 12-kV line. One site (Trinity PUD-6) would be impacted by these activities. Two sites (Trinity PUD-3 and Trinity PUD-8) would be largely avoided. Documentation of the sites would mitigate any impacts.

Segment 2 "Lewiston Tap"

The 80-ft ROW to build approximately 1.2 mi of new 60-kV transmission line and connect to the Lewiston Substation would be constructed in an area where no sites were recorded. None of the proposed structures have been staked in areas of known cultural resources. Construction and maintenance of Segment 2 would parallel an existing Trinity PUD distribution line between the two points. Existing access roads would be used, with short spurs up to the new line from the existing access roads. Construction of these spurs would avoid known resources. Lewiston Substation modifications would be within the existing fenced area, so no new disturbance to known cultural resources would occur.

Segment 3 "New Corridor"

The 80-ft-wide ROW to build a new 60-kV transmission line from the Trinity PUD line to a new switchyard at Weaverville would require new ROW and some new or upgraded access roads. This corridor would also run through steep and rugged terrain, although it is mostly outside the boundaries of the STNF. The land in this portion of the project is owned primarily by SPI and is harvested for timber. Therefore, there has been extensive ground disturbance along this portion of the project area. Seven historic era sites and one isolated historic era feature were recorded along the proposed corridor for the new transmission line. These include portions of two known resources and five newly recorded resources. Three potentially eligible sites (AG-Trinity PUD-1, AG-Trinity PUD-6, and AG-Trinity PUD-7) would be crossed by the project's direct APE. Documentation of the sites is recommended to mitigate any direct impacts from the project.

Weaverville Switchyard

Construction of the Weaverville Switchyard would impact site AG-Trinity PUD-8, a potentially significant cultural resource. The access road to the pad of the switchyard would be constructed on an abandoned segment of old Highway 299. However, this segment of old Highway 299 does not appear to meet the eligibility criteria for listing in the NRHP, and no special mitigation measures are required. An existing 60-kV PG&E transmission line would be looped through the new switchyard. The 60-kV line does not appear to meet the eligibility criteria for listing in the NRHP, and no mitigation measures are required.

3.3.2.4 Impacts from the No Action Alternative

There would be no new impacts under this alternative. Impacts would be restricted to existing transmission line and existing access road maintenance. Such maintenance includes periodic air and ground patrols. Repair to the transmission lines or structures could involve localized ground disturbance from heavy equipment. Removal of vegetation by hand or mechanical equipment might be necessary to improve access roads or access to individual transmission line structures.

3.4 GEOLOGY AND SOILS

3.4.1 Affected Environment

This section describes the geologic and soil resources that could potentially be affected by the construction, operations, and maintenance activities associated with the proposed action. It also describes the seismic, landslide, liquefaction, and volcanic hazards that could affect construction and operation of the transmission lines and supporting facilities.

3.4.1.1 Resource Study Area

The project area includes the ROWs for the existing Trinity PUD 12-kV power distribution line from Trinity Power Plant to Lewiston tap and for the proposed new transmission lines from Lewiston tap to Lewiston Substation and from Lewiston tap to the proposed Weaverville Switchyard site. The geology and soils study area includes the existing and proposed ROW and adjacent land uses along the ROW.

3.4.1.2 Issues of Environmental Concern

Issues of environmental concern with regard to geologic and soil resources include erosion, landslides, seismic-related hazards, steep slopes, compaction from construction disturbance, and potential impacts to existing and new access roads.

3.4.1.3 Characterization

Geologic History

The project area is located within the Klamath Mountain geomorphic province, which is characterized by rugged topography with prominent peaks and ridges reaching elevations locally of about 3,000 ft above sea level (CGS 2002).

The geomorphic province is a west-facing arcuate region at the boundary between northwestern California and southwestern Oregon. As a whole, it is composed of four tectonic plates consisting predominantly of marine arc-related volcanic and sedimentary rocks of Paleozoic Era age and Mesozoic Era age. These plates (or belts) are remnants of oceanic crust and island arcs that accreted sequentially from east to west. The sutures between the plates are complex eastward-dipping fault zones along which the eastern plates are underthrust successively by the western plates. Ultramafic and other ophiolitic rocks, along with granitic plutons, are also important components (Ernst and Rubey 1981).

Bedrock Geology

The project ROWs traverse geologic formations that make up the Eastern Klamath Belt in the eastern portion and the Central Metamorphic Belt toward the western portion of the project area. **Figure 3.4-1a** is a geologic map of the project area adapted from the geologic map of the Redding 1 × 2 degree quadrangle prepared by Fraticelli et al. (1987). Following are descriptions of the geologic units from oldest to youngest in age.

Copley Greenstone Formation

The Copley Greenstone Formation is a fractured hard rock unit of volcanic origin. It has been described by Albers and Robertson (1961) as consisting chiefly of fragmental and nonfragmental mafic lava and mafic pyroclastic rocks. These rocks have undergone low-grade metamorphisim, with the result that most primary igneous minerals have been replaced. The primary igneous textures and structures are preserved, however, so the original volcanic character of rock can readily be recognized in most places. The great areal extent of the formation in northern California suggests that it was ejected from several volcanic centers.

No fossils have been found in the Copley Greenstone Formation, and its age must be deduced from its relationship to the overlying rocks. It is probably from the Middle Devonian Period or older.[1]

Bragdon Formation

The Bragdon Formation consists principally of shale, mudstone, and conglomerate, but it also includes subordinate sandstone, siltstone, and pyroclastic rocks. The most reliable criterion for recognizing the Bragdon Formation is the conglomerate beds, consisting mainly of chert pebbles (Albers and Robertson 1961). The sediments of the Bragdon Formation probably were deposited in the bathyal depth zone, near steep shores. The Bragdon Formation is from either the Late Devonian or Early Mississippian Period.

Central Metamorphic Belt

The Central Metamorphic Belt is located to the west. Salmon hornblende schist and the Abrams mica schist together make up this geologic belt. This is a fractured hard rock unit with a thin colluvial mantle that is only a few feet in depth except within colluvial hollows, where the colluvium can be 10-ft deep or more.

The Salmon schist is commonly a fine- to medium-grained, well-foliated hornblende-epidote-albite schist. It was formed from mafic volcanic rocks. The plunge of the foliation is to the east.

The Abrams schist is predominantly metasedimentary rock and includes quartz-mica schist, micaceous marble, and minor amphibolite. The isotopic age of the Salmon and Abrams schist is the Devonian Period.

Weaverville Formation

Only a very small area of this formation is found along the proposed route in the eastern portion of Section 11, T33N, R9W. The Weaverville Formation is composed of Oligocene sediments such as sandstone, shale, and coarse stream conglomerate. This formation is more prone to landsliding than are the other aforementioned formations, especially where it is composed of coarse stream conglomerate, but its topographic position in this case is atop a ridge, which limits this potential.

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[1] See **table 3.7-1** for the geologic time scale.

In addition to the aforementioned formations, outcrops of hornblende-biotite granodiorite of the Shasta Bally batholith and of unconsolidated Quaternary Period river terrace and landslide deposits are also found locally.

Geomorphology

Throughout geologic time, mass wasting and stream alluviation have played a major part in shaping the geomorphology of the Klamath Mountain area.

Geomorphic processes include colluviation (the predominant process with regard to areal extent), rotational landsliding, debris flows and slides, headwall basin formation, and stream alluviation. In most cases, these processes are inactive or dormant. In some cases, such as in colluviation and intermittent debris flows, they are still active.

Little Brown’s, Trinity House, Eastman, and Mooney Gulches demonstrate historical debris flow characteristics as evidenced by debris flow deposits.

Figures 3.4-1b and 3.4-1c are maps of the geomorphic features near the project ROWs.

Mineral Resources

Trinity County has a long history of gold mining activities. Historically, mining for the gold in the region was mainly placer mining. Historical mining activities and locations are further described in Section 3.3, Cultural Resources.

Mining activities are still occurring in the area, with gold mostly being recovered by individuals panning or dredging along various streams, rivers, and gulches, especially during the spring and early summer months. Several mines are located within the project area. These mines are the Union Hill Mine (south of Weaverville near the intersection of Highway 3 and SR 299), Vencia Mine (approximately 4 mi south of Trinity Dam spillway), Woodrat Mine (about 3 mi west of Trinity Dam spillway), Brown Bear Mine (near Deadwood), Dien Mine (approximately 6 mi north of Trinity Dam Spillway), Five Pines Mine (approximately 6 mi northeast of Trinity Dam Spillway), Reese Brothers Mine (about 5 mi south of Douglas City), and Phillips Mine (approximately 3 mi southeast of Douglas City).

In addition to gold mining, there are a number of sand, gravel, and/or shale facilities in the vicinity of the project area. These include the La Grange Mine (sand and gravel operation about 3 mi west of Weaverville), the Riley Placer Mine (shale operation near Lewiston), and the Smith Tailings (sand and gravel operation between Junction City and Weaverville).

Faults

In 1972, the California Legislature enacted the Alquist-Priolo Fault Zoning Act, which requires the State geologist to delineate “Earthquake Fault Zones” around all known traces of potentially and recently active faults in California. Before a project can be permitted, cities and counties require a geologic investigation to demonstrate that proposed buildings will not be constructed across active faults. A licensed geologist must prepare an evaluation and a written report on a specific site. If an active fault is found, any structure designed for human occupancy must not be placed over the trace of the fault and must be set back from the fault (generally 50 ft). However, the California Geological Survey (CGS) presently does not place any fault in Trinity County within the Alquist-Priolo Earthquake Fault Zones, and the proposed line (and its towers) is currently located more than 50 ft from the aforementioned faults.

A few faults have been closely mapped near the project area. These include one located about 0.25 mi east in section 15, just west of and parallel to Trinity House Gulch (Irwin 1963). This fault has a surface trace of about 3 mi in a northwesterly direction. The other fault is located in Section 22, T34N, R8W. It forms the contact between the Bragdon Formation and the Copley Greenstone Formation and runs northwest-southeast. Its trace lies about 200 ft north of the southernmost existing transmission line (Bonham et al. 1956). The major regional faults near the project area are shown in **figure 3.4-2** (USGS 2005).

Several Paleozoic Era faults have been identified within a 10-mi radius of the project area. These include Spring Creek Fault, Hoadle Fault, Bolly Choop Fault, La Grange Fault, and Siskiyou Fault. These faults have been inactive for a long period and have shown relatively minor historical displacement.

Seismic Hazards

Although not as active as some areas of the western United States, the local area does nevertheless demonstrate active seismicity. (The seismicity of a region is described as the distribution, recurrence, and intensity of earthquakes over a period of time.)

According to the U.S. Geological Survey (USGS 2007), no earthquake greater than 6.0 on the Richter scale has occurred within the local area since 1910. Most earthquakes whose epicenters fall within a 10-mi radius of the proposed line fall within a range of 4.0 or less, with the major portion falling at the lower end of this range.

Within the past 120 years, there has been no significant property damage or loss of life as a result of earthquakes occurring in this region of the Klamath Mountains. Maximum recorded intensities have reached Modified Mercalli VII, with the majority in the I to III range.

A seismic hazards map of the project area is shown in **figure 3.4-3** (CSSC 2003). The zones shown in this figure depict the relative intensity of ground shaking and damage projected to occur in northern California counties from anticipated future earthquakes. So, while the Weaverville switchyard at the western end of the project would sit near an identified fault line (**figure 3.4-1a**), the project would be located in a region with a relatively low potential for strong shaking and related damage.

Slope Stability Hazards

The existing line east of Lewiston Lake crosses an ancient rotational landslide bench (section 22 south of Bear Gulch) and headwall basins (in NW1/4 Section 34, T34N, R8W, north of Eastman Gulch; along Jennings Gulch; and in Section 9, T33N, R8W). Colluvial hill slopes constitute the larger remaining area. Debris flow characteristics are apparent along Eastman Gulch and, to a lesser extent, along Mooney Gulch. These features were identified through aerial photo interpretation.

Specifically, the eastern half of the proposed transmission line west of Lewiston Dam follows the top of a ridge, which is also occupied for a portion by a long-standing (1983 or before) service road. On the basis of aerial photo mapping (1:24,000 scale), no mass wasting features have been identified for this ridgetop area.

The middle portion of the proposed transmission line (segments 0003 and 0004) follows a long-established road (Trinity 222) west of and paralleling Trinity House Gulch. This portion of the proposed line is characterized by slopes ranging from flat to about 30%. Colluvial hill slopes and colluvial hollows make up this area geomorphically. Small road-related debris slides are also in evidence. This area was field checked in June of 2007 by the USFS.

Because of the presence of colluvial hollows, it is recommended that in these segments, tower foundations be placed on convex slopes whenever possible.

The western portion of the proposed line again follows a ridge top. On the basis of aerial photo mapping (1:24,000), no mass wasting features have been identified atop this ridge.

Volcanic Hazards

No volcanic hazards are present within the local area. The nearest active volcanic center is located in the Mt. Shasta/Medicine Lake Highland area, about 60 linear mi to the northeast.

Geologic Special Interest Areas

There are no established geologic special interest areas in proximity to the project area.

Soils

The soils within the project area are generally deep (40 to 60 in.) and well-drained gravelly loams to gravelly sandy clay loams with moderate to high runoff and moderate permeability. Soils are located on mountainside slopes with slopes predominately ranging from 30 to 75%. Vegetation is mixed conifer and ground cover is about 20% to 75% (mostly by gravel, needles, leaves, twigs, branches, and cones). The erosion hazard ratings are low to moderate. The ROWs in Segments 1, 2, and 3 would cross six soil associations mapped by the Natural Resources Conservation Service (NRCS), as described in **table 3.4-1** (NRCS 1998, 2006) and shown in **figure 3.4-4** (NRCS 2006).

The USFS has completed a soil resource inventory (SRI) for the STNF, including portions of the project area, to assist in its land management efforts. The SRI identified over a hundred different soil types, many with a high to very high erodibility factor (a measure of a soil's susceptibility to erode). According to the USFS, the "greatest threat to the maintenance of soil productivity [in the STNF] is erosion" (USFS 1995).

Table 3.4-1 Descriptions of Soil Units in the Project Area

Soil Units	Erosion Hazard Rating[a]	Description
Segment 1		
Hoosimbim-Bamtush-Marpa (7 on **figure 3.4-4**))	Moderate	Extremely gravelly sandy loam to very gravelly sandy clay loam; 30–50% slopes. Occurs on mountains in areas dissected by perennial streams. Permeability is moderate. Rapid runoff; moderate water erosion hazard. Unit is used for timber production.
Goulding-Vitzthum-Vanvor (5 on **figure 3.4-4**)	Low	Extremely gravelly loam to very gravelly sandy clay loam; 50–75% slopes. Occurs mainly on south-facing mountain slopes in areas dissected by perennial streams. Shallow to moderately deep; well to excessively drained. Permeability is moderate. Very rapid runoff; severe water erosion hazard. Unit is used as watershed, recreational area, or wildlife habitat.
Marpa-Goulding (9 on **figure 3.4-4**)	Moderate	Very gravelly loam to very gravelly sandy clay loam with rock fragments; 30–75% slopes. Occurs on mountains in residuum and colluvium. Shallow to moderately deep, well to excessively drained soils. Permeability is moderate. Very rapid runoff; severe water erosion hazard. Unit is used for timber production and as watershed, recreational area, and wildlife habitat.
Segment 2		
Brownscreek-Dougcity-Bamtush (2 on **figure 3.4-4**)	Moderate	Gravelly loam to extremely gravelly loam; 30–50% slopes. Occurs on south-facing mountain slopes in areas dissected by perennial streams and on ridgetops. Deep to very deep and well-drained. Permeability is moderate to moderately slow. Rapid runoff; moderate to severe water erosion hazard. Unit is used for timber production.
Musserhill-Musserhill Variant (10 on **figure 3.4-4**)	Low	Gravelly loam to loam; 15–50% slopes. Occurs on hills in areas dissected by perennial streams. Moderately deep, well-drained. Permeability is moderately slow to slow. Rapid runoff; moderate to severe water erosion hazard. Unit is used for home site development or wood products.
Tallowbox-Minersville-Bamtush (12 on **figure 3.4-4**)	Moderate	Gravelly course sandy loam to sandy loam; 30–75% slopes. Occurs on mountains and ridgetops. Moderately to very deep, well-drained. Permeability is moderate to moderately rapid. Rapid runoff; moderate to severe water erosion hazard. Unit is used for timber production.
Hoosimbim-Bamtush-Marpa (7 on **figure 3.4-4**)	Moderate	See description above.
Segment 3		
Goulding-Vitzthum-Vanvor (5 on **figure 3.4-4**)	Low	See description above.

[a] Erosion hazard ratings were calculated by using the methodology reported on in Chapter 50, "Soil Erosion Hazard Rating," of the *Soil and Water Conservation Handbook* (USFS 2006b). The ratings presented in this table represent the hazard potential for erosion for soil units once the project has been completed, assuming there would be a 20% to 50% reduction in soil cover. Soil units with a rating of "moderate" would require mitigation to reduce the erosion potential to a rating of "low."

Sources: NRCS (1998, 2006).

Several factors influence the degree to which and rapidity with which a soil will erode. These include soil texture, soil structure, rock fragments, the amount of ground cover, and the degree of compaction. Erosion potential is generally more severe on steep, sparsely vegetated slopes and in loose, sandy soils where strong winds occur. In the vicinity of the project area, erosion is evident in areas that have been logged, placer-mined, and subject to wild fires.

3.4.2 Environmental Consequences

This section describes potential impacts to the geologic and soil resources associated with the proposed action. It also discusses impacts associated with seismicity, landslides, liquefaction, volcanic hazards, and soil conditions that could affect construction and operation of the project.

3.4.2.1 Standards of Significance

The following criteria are used to assess the significance of potential geology and soil impacts. A significant geology and soil impact would occur if construction and operation of the project exposed structures or facilities to:

- Natural or induced soil movement and slope instability or
- Effects of fault rupture or other effects from an earthquake.

The project would have a significant effect on soils if it:

- Substantially increased erosion along the transmission line ROW, access and spur roads, or associated facilities or
- Affected downstream resources through increased erosion and sedimentation.

3.4.2.2 Environmental Protection Measures

Geology

EPMs to address geological concerns relate to the effects that natural hazards (e.g., seismic activity or landslides) might have on the project. The probability and magnitude of geologic events (earthquakes or volcanic eruptions) that could result in groundshaking and mass movement as well as the presence of unstable slopes in the project area would be evaluated and mitigated to the extent possible (through grading or relocating) during the final design phase for project structures and roads.

Soils

Because the soils in the project area have a moderate to high erodibility factor,[2] EPMs have been developed to ensure their long-term protection. The EPMs listed below are based on USFS management guidelines as delineated in the *Soil and Water Conservation Handbook* (USFS 2006b).

General

- All Western's IVM requirements (Western 2007a) and land management agency requirements would be met during construction and operation of the project.
- Construction of project ROWs would be timed to avoid winter storms.
- Wet weather logging would not occur on soils with a high compaction hazard (e.g., Marpa-Goulding-Hohmann).
- No more than 15% of a harvest area would be dedicated to roads and landings.
- Erosion control measures (as described in this section) would be continuously monitored and maintained to ensure optimal effectiveness.
- Disturbance and removal of soils and vegetation would be limited to the minimum area necessary for access and construction.
- Fuel reduction activities would retain 30% to 50% of the existing duff mat.
- All temporary roads and landings would be ripped (with winged subsoiler) to a depth of 18 in., seeded with native species, and mulched with appropriate material (fine slash, wood chips, weed-free or rice straw, or a combination of these).
- Grading would be minimized to the extent possible. When required, grading would be conducted away from watercourses and washes to reduce the potential for material to enter them.
- All fire lines would be water-barred; fire lines with less than 35% rock fragments would be mulched with straw or fine slash to achieve a ground cover of 75% or greater.
- Mechanical skidding equipment would be restricted to slash-covered primary skid trails where slopes were greater than 40%.

[2] Erodability factor is a value ranging from 1 (low) to 4 (very high) that is assigned to a soil unit on the basis of its textural class and slope steepness. It is one of several variables used to calculate the erosion hazard rating for a soil unit.

- Ground-based mechanical equipment would operate only on fine-textured soils (nonrocky) when the soils were dry to a depth of 8 in., from June through September.

- Construction would meet the requirements set forth in the *Integrated Vegetation Management Environmental Guidance Manual* (Western 2007a).

- Soil excavated for structure foundations would be backfilled and tamped around the foundations and used to provide positive drainage around the structure foundations.

- All construction areas would be routed around wet areas, and the route would not be allowed to cross sensitive resource areas. If wet areas could not be avoided, best management practices (BMPs) would be implemented for these areas during the construction and improvement of access roads and during their subsequent reclamation.

- Once construction was complete, all work areas except access trails would be scarified and seeded with native species or left in a condition that would facilitate natural or appropriate vegetation, provide for proper drainage, and prevent erosion. Post-treatment total soil cover should be between 50% and 70%, with at least 50% cover as fine slash (less than 3 in. of material) on metamorphics and greater than 90% cover on granitics.

Roads

- Existing roads would be used to the extent possible to avoid watershed impacts due to erosion and sedimentation.

- All native surface roads would be spot rocked with aggregate during wet weather operations, especially into creek drainages.

- If new roads were constructed (or existing roads were improved), approaches to stream crossings would be rocked to reduce sedimentation of water courses.

- Silt fences would be installed at culvert outlets during wet weather operations.

- All project-induced disturbed areas would be mulched with appropriate material (fine slash, wood chips, weed-free or rice straw, or a combination of these), and mulch would be maintained throughout the life of the project.

- No debris would be disposed of in or within 100 ft of any Streamside Management Zones, meadows, wetlands, or Riparian Reserves.

- No debris would be disposed of within 100 ft of culverts, road dips, ditches, or anywhere material could reach a stream channel.

- Material cleaned out from culvert intakes would be disposed of in areas that would prevent their entry into a channel or ditch or their reentry into the culvert intake.

- Soil material at disposal sites would be seeded and mulched before winter.

- Temporary roads would be tilled to a depth of 18 in. and mulched with weed-free straw.

- Water bars or rolling dips would be used to control erosion on the last 50 ft of all temporary roads where they entered landings or main roads; these areas would be mulched to achieve a ground cover of 75% or greater.

- Specific measures that would be conducted on Forest Road 34N13 and Forest Road 34N13 C would include the following:

  - Repair rolling dips and overside drains as needed,
  - Spot rock stream crossings as directed by the Forest Service,
  - Remove one culvert and convert the crossing to a drivable low-water crossing,
  - Maintain the remaining drainage structures.

Skid Trails

- Skid trails would be designated and used to minimize soil compaction in the project area, especially when soil was dry to a depth of 8 in.

- Existing skid trails would be used to the extent possible to minimize the number of skid trails.

- Unless unavoidable, skid trails would be limited to areas where the slope was less than 35%.

- Water bars would be used to control erosion in cleared areas where the slope was greater than 35%.

- Appropriate material (fine slash, wood chips, weed-free or rice straw, or a combination of these) would be spread on skid trails to achieve a minimum of 50% ground cover.

- Silt fences would be installed between skid trails and culverts when the slope distance was less than 50 ft.

- Skid trails would be tilled to a depth of 18 in. and mulched.

Landings (e.g., Staging Areas)

- New landings would be located on old landings to the extent possible to avoid watershed impacts due to erosion and sedimentation.

- Landings would be constructed with drainage directed to catchment structures.

- New landing fill slopes would be mulched initially, and the mulch would be maintained throughout the life of the project.

- Landings would be tilled (or "subsoiled") to a depth of 24 in. and mulched with appropriate material (fine slash, wood chips, weed-free or rice straw, or a combination of these).

EPMs involving rocking of roads would be met to the extent that the sections of road to be rocked would be accessible with a dump truck used to haul in gravel. Measures involving mulching of disturbed areas would be met for any areas that were bladed or where areas of bare ground exceeded 20 ft × 20 ft, or an equivalent area.

The USFS has developed soil quality standards (SQSs) to protect soils through land management practices. Long-term impairment of soil productivity, hydrologic function, or environmental health could occur through compaction, loss of organic matter, loss of large woody material, and erosion. The proposed action would follow the SQSs outlined in appendix O of the STNF Land and Resource Management Plan (USFS 1995), which provides threshold values to indicate when changes in soil properties or conditions are detrimental. The threshold values are as follows:

Soil Productivity

- *Soil cover*. This would be sufficient to prevent the rate of accelerated soil erosion from exceeding the rate of soil formation. For highly erodible soils, ground cover would be in excess of 90% and evenly distributed. Skid roads, skid trails, temporary roads, and landing would be tilled to a depth of 18 in. and mulched or planted.

- *Soil porosity.* This would be at least 90% of the total porosity found under undisturbed or natural conditions (as measured at a depth of 0 to 4 in. for soils with herbaceous potential or 4 to 8 in. for soils with tree and shrub potential).

- *Soil organic matter.* This would be present in sufficient amounts to prevent significant short- or long-term nutrient cycle deficits and to avoid adverse physical soil characteristics. Surface organic matter (upper 12 in.) would include litter and duff in at least 50% of the activity area. When in forested areas, large woody material would include at least five logs per acre in contact with the soil surface.

- *Soil moisture regime.* This would be protected where the soil productivity or potential natural plant community depended on specific soil drainage classes.

Soil Hydrologic Function

Water infiltration and permeability would not be reduced to ratings of 6 or 8 as defined in USFS (2006b).

Soil Environmental Health

The soil reaction class, buffering or exchange capacities, or biological populations would not be altered to a degree that would significantly affect soil productivity, solid hydrologic function, or the health of humans and animals.

3.4.2.3 Impacts from the Proposed Action

Steep or Unstable Slopes That Could Create Hazardous Conditions

The proposed action would require local grading that would alter the topography, particularly on steep slopes. However, no grading would occur on slopes steeper than 15%. While existing roads can be very steep at 40% to 50%, all new roads would be 15% or less. Most grading to occur during the project would be required for construction of suitable footings for the transmission line poles. Some grading would also be required for the temporary spur roads, widening of existing access roads, and construction pads for structure sites to provide safe and level surfaces for equipment and construction. Grading would not be required for helicopter landing areas.

The project sites that encountered steep and difficult terrain would be subject to geotechnical hazards that would need to be mitigated before the poles were set. Geotechnical hazards would be evaluated as part of the final design specification for each pole location and road construction area. Options would include avoiding a poor site by selecting a site with stable conditions, or correcting the unstable slope conditions, which usually entails grading. Correction of unstable soil conditions would have potential impacts (e.g., topographic alterations produced by cut-and-fill slopes and increased erosion); however, most construction activities would involve only minor excavations and fill and would meet all applicable agency requirements. Implementing the EPMs described above would reduce adverse impacts related to soil erosion to less than significant. Therefore, the potential impact on the environment would be less than significant due to the small amount of land that would be disturbed.

Seismic Activity That Could Damage Structures and Facilities

Two active faults have been mapped within 3 mi of the project area. All other identified faults near the transmission line ROW are considered inactive Paleozoic faults, which pose a minimal risk of seismic activity. The project is in a region that has relatively low potential for ground shaking. Moreover, Trinity County has a history of low seismic activity. Therefore, seismic activity associated with ground shaking, landslides, or liquefaction in the region poses a less than significant impact to the proposed action.

Ground Disturbance That Could Result in Substantial Soils Erosion

Soils along the project ROW would be impacted by constructing, operating, and maintaining the transmission line and associated access roads. Vehicles and equipment would move along access roads and portions of the ROW during clearing, construction of the transmission line, routine inspection and maintenance, and emergency repairs, and this movement could disturb and loosen native soils and increase the potential for water and wind erosion. However, potential impacts would be limited to portions of the ROW for the transmission line, pulling and tensioning sites, staging areas, and access roads. Use of existing access roads would be maximized to the extent possible to minimize disturbance to soils. Constructing the project would also result in removing vegetation along the transmission line ROW. However, low vegetation would be left in place to the extent possible, to help reduce the potential for soil erosion. Soil erosion is expected to be minimal following successful reclamation of disturbed areas. Because the areas where erosion might increase would be narrow and spread over a large area, the potential for impacts would be reduced. Implementing the EPMs described above would reduce soil erosion impacts to less than significant levels.

<u>**Downstream Resources That Could Be Affected by Erosion and Sedimentation**</u>

Construction of the project would result in surface disturbances and removal of vegetation along the transmission line corridor and around new substation and substation upgrades, leading to increased soil erosion. Exposure of the native soils would increase the potential for water and wind erosion. Increased water and wind erosion are associated with sedimentation of various local and regional water bodies. The impacts associated with degradation of water quality are examined further in Section 3.12, Water Quality, and the impacts to marine life and local fisheries are discussed in Section 3.2, Biological Resources. Sedimentation into streams and water bodies would likely increase if disturbed soils were left exposed, especially during storm events (periods of high precipitation, runoff, and winds). However, implementing the EPMs described above would reduce soil erosion and associated sedimentation to less than significant levels.

In addition, the RWQCB administers the EPA regulations requiring the permitting of stormwater-generated pollution under the National Pollutant Discharge Elimination System (NPDES), as described above. Pursuant to these Federal regulations, an operator must obtain a general permit under the NPDES Stormwater Program for all construction activities involving 1 acre or more. The general permit requires the implementation of BMPs to reduce pollutant loads into the waters of the State. BMPs would be used to minimize erosion and the resulting sedimentation, where appropriate. For the project, an NPDES permit would be obtained from the RWQCB. An erosion and sedimentation control plan, as well as a stormwater pollution prevention (SWPP) plan, would also be developed in accordance with Federal and State regulations. Compliance with these regulations and permitting requirements would serve to further reduce soil erosion and associated sedimentation to less than significant.

3.4.2.4 Impacts from the No Action Alternative

Under the no action alternative, the existing distribution line would remain in place. No new lines would be constructed, and the existing line would continue to be periodically accessed along the existing ROW and access roads. The no action alternative would result in no additional impacts to geology and soil resources in the project area over current conditions.

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3.5 LAND USE

3.5.1 Affected Environment

3.5.1.1 Resource Study Area

The land use study area includes the transmission line ROW and adjacent land uses along the corridor, including access road ways. The study area consists of the area within 1 mi of the ROW and the access roads for the project.

3.5.1.2 Issues of Environmental Concern

Issues of environmental concern within the study area include development actions that would be inconsistent with adopted land use plans and goals of the community or federally managed lands. Issues of environmental concern also include development actions that would create conflicts in established recreation areas, conflicts with land/habitat reserves, or conflicts with existing utility ROWs. The environmental impacts of these issues could occur temporarily during construction and/or over the long term during operation and maintenance.

3.5.1.3 Characterization

Trinity County is one of 58 counties in California and encompasses 3,178.6 mi^2. The project is located in the eastern portion of the county within an area between the communities of Lewiston and Weaverville. The land ownership in the project area consists of both private and public lands. The majority of the land is held by the USFS, the BLM, Reclamation, and SPI. The remaining land is held by a few private landowners. **Figure 3.5-1** shows the parcels and ownership of the project alignment.

Trinity County's General Plan and Zoning Ordinance governs the privately held lands within Trinity County. However, lands held by Federal Government agencies are not subject to local land use controls.

<u>**Federal Lands**</u>

U.S. Forest Service

Federal lands held by Federal agencies are not subject to county land use regulations, they are, however, subject to Federal land management plans. Much of the land within Trinity County is in the STNF, administered by the USFS. National Forest management is guided by various laws, regulations, and policies that provide the framework for all levels of planning, including Regional Guides, Land and Resource Management Plans (LRMPs), and site-specific documents, such as this EIS. The LRMP provides guidance for managing National Forest System lands. Guidance from the Northwest Forest Plan (NWFP) ROD is incorporated into the STNF LRMP. The LRMP was amended by the *Record of Decision and Standards & Guidelines for Amendments to the Survey and Manage, Protection Buffer, and Other Mitigation Measures Standards and Guidelines* (USDA and DOI 2001) on January 12, 2001; by the *Record of Decision to Remove or Modify the Survey and Manage Mitigation Measure Standards &*

Guidelines (USDA and DOI 2004b) on March 22, 2004; and by the *Record of Decision Amending RMP for Seven BLM Districts and LRMP for Nineteen National Forests within the Range of the Northern Spotted Owl — Decision to Clarify Provisions Relating to the Aquatic Conservation Strategy* (USDA and DOI 2004a) on March 22, 2004.

The LRMP identifies 11 Management Prescriptions, or land/resource zones, for which there have been established standards and guidelines. To aid in managing the forest, the LRMP divides the National Forest into 22 management areas. The project is within the Whiskeytown-Shasta-Trinity National Recreation Area (NRA) (i.e., Trinity Unit) and Lewiston Weaverville Management Areas. The project's transmission line ROW and access roads would be in two mapped Management Prescription Areas: Late-Successional Reserves and Roaded Recreation. In addition, within these mapped Prescription Areas, there are Riparian Reserves that are not shown in the LRMP maps. These Riparian Reserves also have established standards and guidelines. Riparian Reserves are based on specific criteria such as the outer edges of the 100-year floodplain for fish-bearing streams; or for permanently flowing non-fish-bearing streams, the outer edges of riparian vegetation or 150-ft slope distance (300 ft total, including both sides of the stream channel), whichever is greatest, or 100 ft for seasonally flowing or intermittent streams. Given the number of potential reserve locations that are possible, the mapping of specific locations was not performed. The standards and guidelines for the three Prescription Areas are very extensive; therefore, they are presented in appendix E. In addition, the LRMP can be found at Web site http://www.fs.fed.us/r5/shastatrinity/publications/forest-plan.shtml, and it is incorporated by reference.

The LRMP includes a specific guideline for ROW, contracted rights, easements, and special use permits. This guideline is presented below:

> Access to non-Federal lands through Late-Successional Reserves will be considered and existing rights-of-way agreements, contracted rights, easements, and special use permits in Late-Successional Reserves will be recognized as valid uses. New access proposals may require mitigation measures to reduce adverse effects on Late-Successional Reserves. In these cases, alternate routes that avoid late-successional habitat should be considered. If roads must be routed through a reserve, they will be designed and located to have the least impact on late-successional habitat (USFS 1995).

In addition, within the Trinity LRMP area is the Whiskeytown-Shasta-Trinity NRA, which is also subject to the policies established in the NRA Act of 1965. It should be noted that the Act specifically states that it should be coordinated with the other purposes of the CVP. Another overlapping planning designation is the Adaptive Management Area Designation of a portion of the Roaded Recreation prescription around Lewiston Lake. Furthermore, the Trinity River, beginning 100 yd downstream of Lewiston Dam, is designated as a Recreational component of a Wild and Scenic River.

Bureau of Reclamation

Within the National Forest and the NRA there are two Reclamation Zones. The first Reclamation Zone is the area of the Trinity Dam and banks of the Trinity River immediately south of the dam. The southern area on the eastern bank contains the Trinity Substation, which is the starting point for the project. The second Reclamation Zone is Lewiston Dam and the land to the north and south of the dam that includes the Trinity River Fish Hatchery. Reclamation's *Reclamation Manual* is a series of policies, directives, standards, and delegations of authority that collectively assign program responsibility and authority, and it documents Reclamation's methods of doing business (Reclamation 2002). It provides the guidelines for making land use decisions for Reclamation project lands, and it states that the right to use Reclamation lands or facilities by other parties may be granted only when the proposed use is compatible with Reclamation project purposes and consistent with applicable resource management plans. For the purposes of analysis of compatibility of the project with Reclamation lands, the analysis will focus on the purposes of the two dams, and because the two Reclamation Zones are within the National Forest as well as the NRA, the LRMPs for these will be used as the applicable resource management plans.

Bureau of Land Management

The other large Federal land holder in the project area is the BLM. Land use policies for lands under the administration of the BLM are set out in the *Redding Resource Management Plan* (RMP) (BLM 2007). The project would be within the Trinity Unit of the RMP. The RMP has the following resource condition objectives and land use allocations regarding Trinity lands administered by the BLM.

Resource Condition Objectives

1. Enhance recreation opportunities related to use of the Trinity River, including mineral collection.

2. Maintain scenic quality along the river corridor.

3. Protect and enhance the anadromous fisheries of the Trinity River.

4. Interpret and protect key cultural and natural resources for the public, including the Helena Town site, Rush Creek, Montana Cabin, and Salt Flat.

5. Maintain the riparian habitat in Class I or Class II condition.

6. Resolve survey-related trespass uses.[1]

7. Consolidate and increase, as feasible, public ownership within areas of low intensity or undeveloped land uses that constitute the designated river corridor.

8. Maintain a limited supply of forest products from available commercial forest lands, if not in conflict with the above goals.

9. Maintain opportunities for the exploration and production of locatable mineral values outside the protected areas.

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[1] Land surveys conducted by the BLM have found that parcels of BLM land have been used for unapproved private development. The RMP identifies these unapproved developments as trespass uses.

Land Use Allocations

1. Designate the area shown in **figure 3.5-1** as the corridor for this “recreational” component of the National Wild and Scenic Rivers System. This variable width corridor excludes existing and approved developed land uses. Within developed areas, the corridor is limited to the riparian zone and, if appropriate, the undeveloped viewshed behind the developed area. Outermost boundaries of the corridors were established by using the following criteria (in descending priority): definable topographic features, roads, surveyed ownership line, line-of-sight, and 1/4 mi from normal high water.

2. Manage all public lands as Visual Resource Management (VRM) System Class III.

3. Manage all public lands within the corridor as Roaded Natural or Semi-primitive Motorized.

4. Limit motorized vehicle use to designated roads and trails.

5. Allow forest management practices consistent with VRM Class II guidelines and special status species protection. All available commercial forest land would be managed for the enhancement of other resources values.

6. Maintain existing withdrawals from mineral entry at Junction City and Douglas City campgrounds (58 acres and 140 acres, respectively). Withdraw other proposed and developed public facilities from mineral entry. Withdraw specific cultural resources from mineral entry, including Helena, Rush Creek, Ohio Flat, Salt Flat, and Montana Cabin. Withdraw anadromous fisheries habitat improvements from mineral entry, including Steiner Flat and Cemetery Hole. New acquisitions in this area would not be opened for locatable mineral entry.

7. Offer for mineral leasing with no surface occupancy within areas withdrawn from mineral entry.

8. Offer mineral material disposals only to enhance riparian vegetation, anadromous fisheries habitat, or when not in conflict with the long-term protection of natural values.

9. Close the area to livestock grazing.

10. Acquire available unimproved lands within the corridor.

11. Seek administrative transfer of two parcels ([N1/2 Section 4, N1/2 Section 5, T. 32 N., R. 10 W.] and [W1/2 Section 29, All of Section 30, All except W1/2 of SW1/4 Section 31, and W1/2 Section 32, T. 33 N., R. 10 W.]), totaling approximately 1,450 acres, from the Trinity Forest.

As part of its land management function, the BLM is responsible for the management of mining claims within the publicly held lands of Trinity County. Within the project area there are

11 mining claims, and a number of additional claims that are presently closed but could become active upon relocation.

Private Lands within Trinity County

Land Use Designations

Although Federal land management agencies are not required to follow local land use plans, the Trinity County General Plan (Trinity County 2003b) has identified land use designations for the parcels within the project area. The General Plan designates most of the land within the project area as “Resource,” with a few parcels designated as “Rural Residential.” The Resource designation relates to both parcels held by the public agencies and the timber production areas of the county. The General Plan permits the placement of transmission lines on this land use designation. Rural Residential designations permit the construction of homes; however, the General Plan also permits the placement of transmission lines (Bonomini 2005). **Table 3.5-1** lists the land use designations of the parcels that would be crossed by the project.

Zoning

The Trinity County Zoning Ordinance has designated zoning for both private and Federal lands in the project area. The Zoning Ordinance designates most of the land within the project area as either Unclassified or Timber Production Zone (TPZ), with a few parcels designated as Rural Residential. According to the Zoning Ordinance, transmission lines are a permitted use in these designations. **Table 3.5-1** shows the land use and zoning designations for the parcels (as shown in **figure 3.5-1**) crossed by the transmission line.

3.5.2 Environmental Consequences

3.5.2.1 Standards of Significance

Within the study area, potential land use impacts would be considered significant if the project and alternatives would do the following:

- Displace a large number of people;
- Disrupt or divide the physical arrangement of an established community;
- Conflict with adopted environmental plans and goals;
- Conflict with established recreational, educational, religious, or scientific uses;
- Conflict with applicable Federal, regional, State, or local land use plans, policies, and controls;
- Conflict with existing or proposed uses at the periphery of the facility or with local land use plans;

Table 3.5-1 Trinity County Land Use and Zoning Designations

Assessor Parcel Number (APN)	General Plan	Zoning
APN# 025-040-28, 29, 30	Resource	Unclassified
APN# 025-040-08	Resource	Unclassified
APN# 025-040-27	Resource	Unclassified
APN# 025-040-23	Resource	Unclassified
APN# 025-040-24	Resource	Unclassified
APN# 025-320-15	Rural Residential	Rural Residential 1-acre min.
APN# 024-080-19	Resource	Unclassified
APN# 025-010-09	Resource	TPZ
APN# 025-050-15	Resource	Unclassified
APN# 010-230-22	Resource	Unclassified/RD-1
APN# 010-310-01	Resource	Ag-Forest/RD-1
APN# 010-310-14	Resource	Unclassified/RD-1
APN# 010-310-15	Resource	Unclassified
APN# 010-300-20	Resource	Unclassified/RD-1
APN# 025-070-07	Resource	Unclassified
APN# 025-040-17	Resource	Unclassified
APN# 025-040-21	Resource	Ag-Forest 160-acre min.
APN# 025-040-10	Resource	TPZ
APN# 025-040-04	Resource	TPZ
APN# 025-050-37	Resource/Open Space	Open Space
APN# 025-020-04	Resource	Unclassified
APN# 025-070-02	Resource	TPZ
APN# 025-010-20	Resource	TPZ
APN# 025-010-04	Resource	TPZ
APN# 025-020-01	Resource	TPZ
APN# 025-030-01	Resource	TPZ
APN# 025-040-08	Resource	TPZ
APN# 024-080-08	Resource	TPZ
APN# 024-080-03	Resource	TPZ
APN# 024-080-11	Resource	TPZ
APN# 024-080-17	Resource	Open Space
APN# 025-010-03	Resource/Open Space	Ag-Forest 20-acre min.
APN# 025-510-10	Rural Residential/Open Space	Rural Residential 1-acre min.
APN# 025-510-11	Rural Residential/Open Space	Rural Residential 1-acre min.
APN# 025-510-12	Rural Residential/Open Space	Rural Residential 1-acre min.
APN# 025-510-13	Rural Residential/Open Space	Rural Residential 1-acre min.

- Result in nuisance impacts attributable to incompatible land uses;
- Cause major conflicts in established recreational areas;
- Permanently preclude planned land uses over a large area;
- Conflict with an existing utility ROW; and
- Cause physical damage to roads that is not repaired to a level equal to or better than what existed prior to construction.

3.5.2.2 Environmental Protection Measures

EPMs for land use issues from **table 2-2** include:

- When weather and ground conditions permit, all construction-caused deep ruts would be restored to preconstruction condition, as practical. Roads would also be graded, sloped and water bars and other erosion control features per land management agency requirements.
- On completion of the work, all work areas except access trails would be scarified or left in a condition that would facilitate natural revegetation, provide for proper drainage, and prevent erosion. Reseeding could be used in areas where establishment of natural vegetation would prevent erosion.
- During construction, movement would be limited to the access roads and within a designated area of the ROW to minimize damage.
- Construction operations would be conducted to prevent unnecessary destruction, scarring, or defacing of the natural surroundings to preserve the natural landscape to the extent practicable.
- No permanent discoloring agents would be applied to rocks or vegetation to indicate limits of survey.
- Damaged fences and gates would be repaired or replaced to restore them to their preconstruction condition.

The EPMs included in the socioeconomics section (section 3.9.2.2) are also designed to minimize and avoid potential impacts to other land uses, including nearby residences, businesses, landowners, and motorists during construction. In addition, the EPMs included in the water resources and soils geology sections (sections 3.13 and 3.4, respectively) would also minimize and avoid potential land use policy conflicts.

3.5.2.3 Impacts from the Proposed Action

The construction of the project would use an existing ROW or a new ROW that would cross undeveloped land; therefore, the project would not remove houses or other buildings and would not displace people or disrupt or divide the physical arrangement of an established community. Therefore, the project would not impact communities. Acreage disturbed is given in Table 2-1.

The project would cross land subject to three land use plans (i.e., USFS, BLM, and Trinity County), as well as Trinity County's Zoning Ordinance. As outlined above, these agencies have adopted land use plans, as well as environmental goals for the lands that each governs.

U.S. Forest Service

Segment 1

A portion of Segment 1 (approximately 5.3 mi) of the project would use an existing Trinity PUD line ROW. As an existing utility ROW, the project would not conflict with existing USFS uses and plans. In addition, the LRMP specifically recognizes the development of existing utility ROWs in connections between Federal and non-Federal lands as a permitted use. However, the project would require the widening of the existing ROW, which would remove trees along the ROW as well as replace existing poles with new poles. About one-third of the poles would require additional guys and anchors to support the poles. Some anchor points would fall outside of the widened ROW. The anchor points would be selected to avoid or minimize clearing.

The existing ROW crosses areas identified as Late Successional Reserves, and the existing access roads that would be used to construct the project cross several streams that are governed by Riparian Reserve policies. There is, therefore, a potential that the project would conflict with the policies established for these two reserve types. Conflict with these policies would be a potential significant impact unless mitigated. The EPMs established for land use as well as those developed for Biological Resources (see section 3.2) would reduce the potential impacts to a less than significant level. Furthermore, the project would use existing access roads and would not create new crossings. Improvements of the existing crossings would be limited to hand-placing rock in the immediate locale to temporarily improve drainage crossings for construction equipment and to mitigate potential impacts. Western has been asked by the USFS to remove the one existing culvert to improve drainage and avoid a blowout from a plugged culvert. In addition, construction activities could potentially create erosion, which would also conflict with general land use and specific policies for the reserves. As discussed in Section 3.12 (Water Resources), Section 3.4 (Geology and Soils), and the associated EPMs, erosion control measures (i.e., rocking approaches where possible on main access roads) would reduce the potential for erosion to occur and thereby reduce the potential for conflicts with land use policies to a less than significant level.

With mitigation, the use of and widening of the ROW of Segment 1 would not create any conflicts with established land use or Late Successional and Riparian Reserve policies. However, Segment 1, after passing the Trinity River Fish Hatchery, crosses the Trinity River and CR 105 (Trinity Dam Road). This area is within the NRA (Trinity Unit) of the LRMP. The area is identified as Roaded Recreation and includes policies for the preservation of visual resources for the NRA, including the identification of CR 105 as part of the Trinity Heritage Scenic Byway. As discussed in section 3.11, Visual Resources, the crossing of CR 105 would change the visual appearance, at this point a change that cannot be mitigated. However, nothing in the Act precludes Western from constructing a transmission line across a road. To the extent that it is necessary, therefore, to construct a transmission line over a road in the NRA, nothing in the Whiskeytown-Shasta-Trinity Recreation Area Act of November 8, 1965 (P.L. 89-336; 79 Stat. 1295; 16 U.S.C. 4609) prevents it. In fact, the Act specifically states that it should be coordinated with the other purposes of the CVP. It goes on to state that “the Whiskeytown unit shall be administered by the Secretary of the Interior, and the Shasta and Clair Engle-Lewiston units shall be administered by the Secretary of Agriculture, except that lands or waters needed or used for the operation of the CVP shall continue to be administered by the Secretary of the Interior to the extent he determines to be required for such operations." The power marketing functions of the Secretary of the Interior have been transferred to Western since the Act's passage. If Western needs to have a transmission line cross a road, the Act allows it.

The project route is preferred by both Western and the USFS. Identified alternatives were not carried forward because they were determined to be not feasible or reasonable. While there is resulting impact to visual resources, the Act recognizes the need to coordinate with the other purposes of the CVP, and the land use impacts are less than significant.

The potential increase in the use of off-highway vehicles (OHVs) within the study area, particularly on USFS lands, could conflict with land management guidelines. Further discussion of OHV use, associated impacts, and appropriate mitigation measures is provided in Section 3.13, Wilderness and Recreation.

Segment 2

Segment 2 is within the Whiskeytown-Shasta-Trinity NRA and is identified in the LRMP as Roaded Recreation. In addition, for any stream area the Riparian Reserve policies would also be in effect. Like Segment 1, the development of a utility ROW to connect Federal and non-Federal lands is a permitted use; thus, the development of Segment 2 does not conflict with the LRMP subject to policies for Riparian Reserves, visual resources, and erosion controls as discussed above. Since any drainage crossings on Segment 2 or Segment 3 would be on existing access roads, any new roads created by Western would be outside of Riparian Reserve areas. Therefore, the potential impacts would be less than significant. The connecting point for Segments 1, 2, and 3 is a three-way steel switch structure that would be visible from CR 105 and, potentially, from certain vantage points in the NRA. The impact to visual resources would conflict and would be a potential significant impact. However, the EPMs for visual resources (see section 3.11) would reduce the potential impact. Likewise, the ROW for Segment 2 would be more than 190 ft from the centerline of CR 105, thereby maintaining a 150-ft buffer between the road and the transmission line. The maintenance of the 150-ft buffer and the reduction of visual impacts of the switch structure would reduce the potential conflict to established land use policies to a less than significant level.

Segment 3

From the three-way switch structure, Segment 3 proceeds west for a short distance within USFS land; this area is within the NRA and is also within the Roaded Recreation area of the LRMP. The switch structure would be weathering steel to minimize visual impacts to the extent possible. While the area could be subject to the policies for Riparian Reserves, no drainages are crossed by the project on USFS land in this segment. While it is possible that portions of the ROW within the NRA could be seen with the implementation of the EPMs, the impacts would be less than significant. Therefore, the potential impacts of Segment 3 to land use would be less than significant.

Bureau of Land Management

For the portion of the project that crosses BLM lands (i.e., Segments 2 and 3), there would be a less than significant impact to visual resources (see Section 3.11, Visual Resources). In addition, design features for the transmission line and access roads would reduce potential impacts to habitat and water quality (see sections 3.2 and 3.12) to less than a significant level. Therefore, there would be no conflicts with land use policies established by the BLM RMP (BLM 2007). Because there are 11 active and several closed mining claims present within the area of the ROW, consideration of these claims would be needed prior to final transmission line pole placement. Poles and associated guy anchors would not be placed on existing claims, or if the claim cannot be spanned, Western would negotiate an easement in accordance with EPMs presented in section 3.9.2.2. With the institution of these measures, the potential impacts to mining claims would be less than significant.

Bureau of Reclamation

Portions of Segment 1 cross Reclamation lands along the existing ROW, both at the connecting point with the Trinity Substation and near the Trinity River Fish Hatchery. As discussed in Chapter 1 (Introduction), the Trinity Dam, Lewiston Dam, and Clear Creek Tunnel are part of the CVP; their purposes are the generation of electrical power and the provision of water. The purpose of the project is to improve the reliability of the Trinity PUD system by development of the interconnection between the CVP and Trinity PUD, as authorized in the TRD Act. As such, the project is consistent with the purposes of the Reclamation Zones. Impacts to Reclamation land would be less than significant.

Trinity County

Portions of Segments 1, 2, and 3 cross privately held lands subject to the land use policies of Trinity County (see **figure 3.5-1**). The project would not conflict with Trinity County land use policies and goals because the land use and zoning designations permit transmission lines and electrical generation, and the associated access roads. Therefore, the project would not result in direct or indirect land use effects.

3.5.2.4 Impacts from the No Action Alternative

The no action alternative would not result in direct or indirect effects to land use.

3.6 NOISE

3.6.1 Affected Environment

This section presents a baseline assessment of current noise levels to facilitate a comparison with noise levels related to construction, maintenance, and operation of the project. It also identifies sensitive receptors in or near the transmission line ROW and the proposed Weaverville Switchyard, and it provides information on significant noise sources within the project area. Noise measurements taken on June 8 and 9, 2006, along various segments of the transmission line and at the proposed Weaverville Switchyard are also provided.

3.6.1.1 Resource Study Area

Fundamentals of Noise

Any pressure variation detectable by the human ear may be considered as sound. Noise is defined as unwanted sound. Sound is described in terms of amplitude (perceived as loudness) and frequency (perceived as pitch). Sound pressure levels, which are directly related to the amplitude of pressure fluctuations, are measured in units of decibels (dB). The perceived pitch of a sound (expressed as highness or lowness) is determined by its frequency. The normal audible range of frequencies that a healthy young person can hear is from approximately 20 Hz (cycles per second) to 20,000 Hz.

Most noise consists of a wide mixture of frequencies known as broadband noise. However, as a protective mechanism, our ears do not hear all frequencies equally. Our hearing is less sensitive at very low (<500 Hz) and very high (>10,000 Hz) frequencies. In order to account for this, weighting filters can be applied when measuring sound. The most common frequency weighting in current use is “A-weighting,” denoted by dBA or dB(A), which gives greater emphasis to the sounds in the frequency bands of human speech and less emphasis to the lower and higher frequencies. The dBA measurement is a good correlation to a human’s subjective reaction to noise. Accordingly, A-weighting is widely used in noise standards, guidelines, and ordinances and has become a standardized tool in analyzing noise and its effects on people.

Sound levels encountered in daily life vary over a wide range. **Table 3.6-1** provides sound pressure levels associated with some familiar sources. In general, 0 dB is the quietest sound that can be heard by a young person, called the “threshold of hearing,” and 130 dB is so loud it causes pain and is called the “threshold of pain.”

The A-weighted sound level mentioned above may adequately indicate the level of environmental noise at any instant in time. However, sound levels generally vary with time, and people’s reactions to noise vary with the time of day. To account for these variances, various noise descriptors are developed.

Table 3.6-1 Typical Sound Levels Measured in the Environment and Industry

Noise Source at a Given Distance	A-Weighted Sound Level (dB)	Noise Environments	Subjective Impression
Civil defense siren (100 ft) next to a jet engine	140		
	130		Limits amplified speech
Jet takeoff (200 ft), acceleration of motorcycle at a few feet	120		
	110	Rock music concert	
Pile driver (50 ft)	100		Very loud
Ambulance siren (100 ft), freight cars (50 ft)	90	Boiler room, food blender, printing press plant	Hearing loss
Pneumatic drill (50 ft)	80	In kitchen with garbage disposal running, very noisy restaurant	Complaints likely
Freeway (100 ft)	70		Moderately loud, complaints possible
Vacuum cleaner (10 ft)	60	Data processing center	
Department store	60	Normal conversation	
Light traffic (100 ft)	50	Private business office, dishwasher in next room	Acceptable noise
Large transformer (200 ft)	40	Quiet urban area at nighttime	Quiet
Soft whisper (5 ft)	30	Quiet bedroom	Very quiet
	20	Recording studio, rural area at nighttime	
	10		

Source: EPA (1974) and compilation of data from a number of private and governmental agency sources.

The equivalent-continuous sound level (L_{eq}) is a sound level that, if maintained continuously during a specific time period, would contain the same total energy as sound that varies over that time. For example, L_{eq} (1-hr) is the 1-hour equivalent-continuous A-weighted sound level.

To account for the fact that people are engaged in more noise-sensitive activities, such as sleeping, during nighttime hours, the community noise equivalent level (CNEL) and day-night average sound level (L_{dn}) were developed. CNEL is a noise index that accounts for the greater annoyance caused by noise during the evening and nighttime hours. CNEL values are calculated by averaging hourly L_{eq} sound levels for a 24-hour period and applying a weighting or penalty factor to evening and nighttime L_{eq} values. As a practical matter, the CNEL and L_{dn} are almost equivalent, usually differing by less than 1 dB; thus, they can be used interchangeably.

Noise can have several adverse effects on people. From these effects, criteria have been established to help protect public health and safety and prevent disruption of certain human activities. The criteria are based on known impacts of noise on people, such as hearing loss, speech interference, sleep interference, physiological responses, and annoyance.

In general, hearing loss is not a concern in community noise situations and is more commonly associated with occupational noise exposures in heavy industrial or very noisy work environments. Speech and sleep interferences are primary concerns associated with environmental noise problems. Annoyance is the most difficult of all noise responses to describe. Annoyance is a very individual characteristic and can vary widely from person to person. What one person considers tolerable can be quite unbearable to another person with an equal capability to hear.

People's responses to changes in sound levels generally exhibit the following characteristics (NWCC 2002):

- A change of 1 dBA cannot be perceived by humans except in carefully controlled laboratory experiments.
- A change of 3 dBA is considered a barely discernable difference outside the laboratory.
- A change of 5 dBA typically results in a noticeable community response.
- An increase of 10 dBA is subjectively heard as about a doubling in loudness and almost always causes an adverse community response.

In general, the prediction of noise levels at a given distance depends on a complex combination of site-specific factors, such as source characteristics, geometric spreading, ground effects, air absorption, natural and man-made barriers, and meteorological effects (Anderson and Kurze 1992). A refined analysis would employ a sound propagation model that integrated most of the sound attenuation mechanisms noted above. Such an analysis would generally require detailed data on source characteristics and site-specific data, such as ground cover, topographical, and meteorological data. However, in many screening applications, only geometric spreading is conservatively considered when noise levels are predicted.

Briefly, when geometric spreading occurs, the sound from a point source (e.g., compressor) decreases by 6 dB with every doubling of the distance from the source. However, when the distance from a line source (e.g., road or transmission line) is doubled, the sound level drops by 3 dB.

Table 3.6-2 is provided to demonstrate how noise would decrease with distance when only geometric spreading is assumed. If other attenuation mechanisms, such as ground effects or air absorption, are considered, a larger decrease sound level would occur.

Noise impacts are generally related to increases in noise levels at sensitive noise receptors. Sensitive noise receptors are identified as residential areas, hotels, libraries, auditoriums, schools, day-care facilities, hospitals, camping facilities, parks, and other locations that could be adversely affected by an increased noise environment.

The project would be located primarily in areas that have few permanent residents and few activities that generate substantial sustained noise events; specifically, the transmission line ROW would pass primarily through the STNF and through lands owned by SPI. Background

Table 3.6-2 Noise Levels at Various Distances[a]

Distance		Noise Level (dBA)	
Feet	Mile	Point Source	Line Source
50	0.0095	91	91
100	0.019	85	88
500	0.095	71	81
1,320	0.25	63	77
2,640	0.50	57	74
5,280	1	51	71

[a] Assume geometric divergence only.

noise within these locations would mostly be associated with natural sources, such as wind and wildlife (e.g., birds and insects).

As shown in **figure 3.6-1**, the northeastern segment of the project area would extend below Trinity Dam along the western bank of Lewiston Lake to below Lewiston Dam. Existing noise-sensitive receptors in this region would be localized residential areas, the Trinity River Fish Hatchery, Ackerman Campground, and other recreational areas (e.g., canoeing, boating, fishing, trails, and sightseeing locations) along Lewiston Lake and the Trinity River. The southwestern segment of the project area would extend from the fish hatchery and terminate at the proposed Weaverville Switchyard, north of Little Browns Creek Road. This substation site is located approximately 2 mi south of Weaverville and just east of SR 3/SR 299. The dominant noise source near the substation site is SR 3/SR 299. Except for a few isolated rural houses, the area has very few noise-sensitive locations.

A segment of the project would extend from the Trinity River Fish Hatchery in a southerly direction along the Trinity River and Trinity Dam Boulevard, terminating at the existing Lewiston Substation. This portion of the project is near several residences in the community of Lewiston.

Activities and locations within the project area that generate noise levels above natural background include those listed below:

- Traffic on major road systems (e.g., SR 3/SR 299) and local roadways near or through the project transmission line corridor;

- Dirt motorbike and OHV activities at various locations along the current 12-kV distribution line on USFS property and rural roads near the proposed 60-kV transmission line ROW;

- Rural residential areas and suburban residential areas near the community of Lewiston and Weaverville;

- The Ackerman Campground, which provides 50 campsites on the northwest bank of Lewiston Lake, and other recreational locations along Lewiston Lake and the Trinity River;

- The Trinity River Fish Hatchery, operated by the CDFG under agreement with Reclamation, below Lewiston Dam, which is used to hatch and rear salmon and is open to the public;

- Dam spillways and water flow along the Trinity River; and

- “Humming” and other sounds associated with the operation of existing electrical lines and substations (e.g., Trinity Substation and Lewiston Substation) and vehicles and equipment used to operate and maintain existing electrical facilities.

3.6.1.2 Issues of Environmental Concern

Potential noise impacts of the project would result from construction, operation, and/or maintenance of the transmission line and proposed Weaverville Switchyard. As indicated earlier, the potential noise impact customarily focuses on sensitive receptors. Sensitive receptors within the project area are limited; they consist primarily of residents and seasonal campers near the communities of Lewiston and Weaverville, as well as campgrounds along Lewiston Lake. Specific sensitive receptors that could be affected are identified in the impacts discussion.

3.6.1.3 Characterization

The characterization of current noise levels near or within the project area was discussed in Section 3.6.1.1, Resource Study Area. The following discussion identifies general noise levels associated with the identified noise sources. In addition, the following discussion presents noise level measurements performed in the area on June 8 and 9, 2006.

<u>Traffic Noise from Area Roadways</u>

The major roadways near the project area are SR 3, SR 299, and a combined SR 3/SR 299 route, as shown in **figure 3.6-1**. SR 3/SR 299 passes east of the proposed Weaverville Switchyard. These three routes are main routes used by local residents and tourists for accessing the western portion of Trinity County. In addition, these roadways provide major commercial and industrial access to counties to the north, south, east, and west. However, none of these roadways cross the transmission line ROW.

There are other local roads that are near or that cross the proposed transmission line ROW. Except for Trinity Dam Boulevard and Rush Creek Road, most of the roads are unpaved and provide access to remote areas, so they are seldom used. Other roadways are located near the proposed transmission line routing, but they are unnamed and seldom used or used by OHVs. Most of these roadways are made of compacted earth or gravel and, in many cases, unimproved. The busiest period for roadways in the project area is between Memorial Day and Labor Day, when recreational activities in the area are at their peak.

With the exception of primary roadways discussed in the previous paragraph, most of the roads in the area have very low traffic volumes. Therefore, noise levels along rural roadways are periodic and very low. Noise levels along major area roadways (e.g., Trinity Dam Boulevard and Rush Creek Road) are expected to range from 50 to 70 dBA at 50 ft from the shoulder of the road.

Off-Highway Vehicles

Most of the project transmission line route would be located in areas with very limited or no development. These areas attract many recreational visitors, especially on weekends, when project construction activities would be limited. Many visitors use the area for off-road recreational activities. The most active OHVs used within many parts of the project area are dirt bike motorcycles. As a result, noise generated from motorcycle use can occur along trails and unmarked routes in the area. In addition, many motorcycles travel in small groups (e.g., two to four people). Noise from OHVs is isolated and localized. Noise levels of most OHVs vary from 50 dBA at 25 ft while the OHVs are idling to more than 90 dBA at 25 ft while the OHVs are accelerating or climbing a grade. Further discussion of OHV use, associated impacts, and appropriate mitigation measures is provided in Section 3.13, Wilderness and Recreation.

Residential and Camping Areas

Isolated residences are located near portions of the project area. The types of residences include homes used by local year-round inhabitants of the area as well as second homes used for weekends and vacations. More populated locations of single-family residential areas are found near the small communities of Lewiston and Weaverville.

Ackerman Campground, just south of the starting point of the proposed transmission line, is located along the western side of Lewiston Lake near Trinity Dam. This campground has 50 camping spaces and is used year round, although it is most active during the summer vacation period.

The general noise environment of areas within and adjacent to residences and camping areas is likely to be typical of rural to suburban locations, normally averaging from 30 to 50 dBA. Outdoor average nighttime noise levels are typically about 5 dBA quieter than daytime averages. However, they can vary widely, depending on the character of the area and environment.

The recreational noise level depends on the type of activity. Fishing represents a very quiet activity, with noise levels comparable to ambient conditions. Boating noise levels depend on the activity (e.g., water skiing versus fishing).

Trinity River Fish Hatchery

The Trinity River Fish Hatchery is located immediately below Lewiston Lake, along the Trinity River. The hatchery is operated by the CDFG under an agreement with Reclamation. This hatchery has the capacity of hatching 40 million eggs annually. The hatchery was constructed to compensate for upstream loss of salmon spawning ground due to the construction of Lewiston and Trinity dams.

The hatchery is open to the public. Except for human activity and vehicles (e.g., tourist and employees), the main noise sources within the facility are pumps used to circulate water. Noise levels of these pumps generally vary from 60 to 70 dBA at 50 ft. Other noise sources along the fish hatchery are the Trinity River and the Lewiston Lake spillway.

Transmission Facilities

The operation of high-voltage transmission lines and electric substation equipment, which exist within the project area, can create audible noise.

Corona discharges are a function of transmission line voltage, circuit geometry, conductor diameter, conductor physical condition, contamination, and weather. Corona-related noise is generated by conductor point discharge sources as a result of the conductor surface condition, foreign particles, and drops of water. These discharges cause localized points with a high gradient, resulting in crackling, frying, hissing, sputtering, and humming noises. Most of the audible noise from transmission lines occurs during foul weather conditions (e.g., rain, fog, or dust storms). However, corona-related noise levels are generally masked by the background noise of the weather condition. In dry or fair weather, the conductors operate below the corona level, so noise is not produced above audible levels. In addition, corona noise levels are more pronounced in high-voltage lines (e.g., those above 230-kV).

Corona noise is estimated at about 39 dBA at 50 ft and 36 dBA at 100 ft from the center of 230-kV transmission lines during inclement weather (Lee et al. 1996). Noise levels for proposed 60-kV transmission lines in this EIS would be much lower than those for 230-kV transmission lines. Accordingly, noise levels would be close to or lower than the rural background level, even at the ROW.

The other audible noise source would be associated with substation operation apparatus; such as circuit breakers, disconnect switches, transformers, and auxiliary equipment at Trinity and Lewiston Substations. Disconnect switches and circuit breaker operations create momentary, very infrequently noise.

Transformers generally are the major sources of noise within a substation. Transformer sources of noise are core noise, load noise, and cooling pump and fan noise. The predominant noise from a transformer is a hum that emanates from the transformer’s core, composed of sound in the frequency range of 120 to 1,200 Hz on 60-Hz lines, which is within the frequency range of human hearing. However, the appropriate specification of sound level in transformers occurs at the time of purchase and is generally controlled by the manufacturer’s design.

Radio interference from overhead transmission lines is generally caused by electrical discharges across small gaps (micro sparks) and corona activity on conductors, hardware, and accessories. Micro sparks across small gaps are probably responsible for the largest percentage of complaints about radio interference by transmission lines from customers, and they are typically caused by loose hardware, damaged insulators, or defective conductor motion control devices. Interference from power-line-generated micro spark activity across gaps can be easily located and eliminated by means of good line maintenance.

Corona activity on power lines sometimes generates unwanted electrical signals that cause interference with radio reception, predominantly on the lower AM radio band. However, radio interference decreases with higher frequencies. As a result, corona activities do not normally affect the higher frequencies found on the FM radio band. The extent of the interference depends on the distance from the line to the radio receiver, orientation of the radio antenna, line geometry, and weather conditions. Properly designed transmission lines with bundled conductors and specifications for insulator assemblies and accessories that are corona free are important for eliminating and controlling radio interference. Furthermore, radio interference is usually not a design problem for low-voltage circuits.

Television interference from transmission lines is generally not a problem and typically occurs only at the lower frequencies under 100 MHz: Channels 2 through 6 (e.g., 54 to 88 MHz). The major source of television interference is micro sparks across small gaps from loose hardware, damaged insulators, or defective accessories such as motion control devices; these can be located and corrected during maintenance.

Other operational noise impacts associated with the current electrical facilities and substations in the area would be motor vehicle traffic that occurs during the inspection and maintenance of the electrical facilities. Noise generated during these activities would be of short duration.

Noise Measurements

To determine the current daytime noise levels in the vicinity of the transmission line and the proposed Weaverville Switchyard, short-term noise level measurements were conducted by using a MetroSonics DB3080 on June 8 and 9, 2006. Six 15-minute on-site noise measurements were taken using the A-weighted scale set on the slow response mode. Noise measurements were taken at various locations along the transmission line, and one measurement was taken near the proposed Weaverville Switchyard. The results of this survey are provided in **table 3.6-3**, and measurement locations are presented in **figure 3.6-1**.

The noise measurements given in **table 3.6-3** are in good agreement with those generally projected earlier for rural residential and camping areas. Except for the fish hatchery, the noise levels provided in the table reflect a rural environment dominated by natural noise sources, such as birds, river flows, and wind. The overall noise environment along the transmission line would likely range around the mid 40s dBA. Noise levels at the fish hatchery reflect general noise associated with operation of the facility as well as spillway noise from the Lewiston Dam.

3.6.2 Environmental Consequences

3.6.2.1 Standards of Significance

This section includes an analysis of potential noise impacts associated with the construction, maintenance, and/or operation of the project transmission line and the new Weaverville Switchyard. The section also contains recommended mitigation measures to reduce potential adverse impacts, if required.

Table 3.6-3 Noise Survey Results for June 8 and 9, 2006[a]

Site	Noise Measurement Location	Day/Time	Loudest Noise Source	Noise Levels (dBA)		
				High	Low	L_{eq}
1	Intersection of Little Browns Creek Road and Browns Mountain Road	June 8/ 3:15 p.m.	Water flow in Browns Creek and bird activities	56.0	47.7	51.9
2	Approximately 2 mi along Browns Mountain Road from SR 3	June 8/ 4:40 p.m.	Bird activities	46.0	44.1	45.1
3	Ackerman Campground (northern portion of Lewiston Lake)	June 9/ 10:40 a.m.	Bird activities and fishing boat	53.1	40.7	46.9
4	Mary Smith Campground (southern portion of Lewiston Lake)	June 9/ 11:15 a.m.	Bird activities	46.3	40.4	43.4
5	Parking lot of the Trinity River Fish Hatchery	June 9/ 11:40 a.m.	Maintenance activity at hatchery and spillway noise from Lewiston Dam	63.1	54.0	58.6
6	End of Jessup Gulch Road	June 9/ 12:15 p.m.	Bird activities	47.9	43.9	45.9

[a] The weather was clear, and the temperature varied from 80º to 90ºF. There was very little wind at measurement locations.

The assessment of potential noise impacts considers the introduction of anticipated noise levels generated during project construction, maintenance, and/or operation with respect to the ambient noise levels in areas and the distance to the sensitive receptor(s). Impacts were analyzed on the basis of a comparison of the project noise sources and levels with applicable ambient noise levels and applicable noise standards — specifically, the analysis covered noise level changes to sensitive receptors. The current *Draft Noise Element of the General Plan, Trinity County, California* (BBA 2002) does not provide recommendations for land use compatibility with respect to major noise sources. However, it does refer to “specific recommendations,” inferring that a State level of 60 dBA CNEL or L_{dn} is the test of significance for major noise sources. Therefore, the 60-dBA level will be used to identify impacts to noise-sensitive receptors.

3.6.2.2 Environmental Protection Measures

Given the speed of construction of transmission lines and the short-term nature of the impact, it is thought that the noise impact would be minimal at existing noise-sensitive locations. However, the following mitigation measures are proposed to further reduce potential short-term impacts.

- Construction occurring within 2,000 ft of a residential dwelling, designated campground or recreational facility, or other noise-sensitive receptor near the transmission line ROW would be limited to Monday through Saturday from 7 a.m. to 8 p.m. in accordance with the Trinity County noise ordinance. Construction on Sunday would be prohibited.

- Construction equipment would be equipped with manufacturer-recommended mufflers or the equivalent.

- Construction equipment would be turned off when not in operation.

- Equipment engine covers would be maintained on the apparatus, as designated by the manufacturer.

- Equipment used for project construction would be hydraulically or electrically powered whenever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatically powered tools was unavoidable, an exhaust muffler on the compressed air exhaust would be used.

- External jackets on the tools would be used where feasible. Quieter procedures, such as drilling rather than using impact equipment, would be used whenever possible.

- Stationary noise sources would be located as far as possible from existing sensitive receptors. If stationary sources had to be located near existing sensitive receptors, they would be adequately muffled and enclosed within temporary sheds, or portable sound blankets would be used.

Although the use of helicopters would be limited to specific remote pole locations and logging operations, and such use would be of short duration, helicopters represent a potential impact to noise-sensitive areas at campgrounds, residential dwellings, and other recreational sites. Therefore, the following mitigation measures are proposed.

- Minimize the use of helicopter construction traffic to the extent practical.

- Minimize helicopter flights at low altitudes (under 1,500 ft) near noise-sensitive receptors, except at locations were only helicopter activities can perform the job task.

- Minimize helicopter operations near campgrounds along Lewiston Lake and near the community of Lewiston when feasible.

Although blasting is anticipated, it would not likely be near noise-sensitive locations. However, blasting noise does pose a potential impact. Therefore, the following mitigation is proposed to reduce any potential noise impacts that could result if rock drilling and blasting were required for construction of the project transmission pole footings.

- Blasting during construction would be conducted only when other practicable excavation methods were not available.

- If blasting was necessary, it would be conducted only during the hours of 8 a.m. to 4 p.m., Monday through Friday.

- Sensitive receptors in areas where the noise from blasting would be greater than 10 dB above ambient noise levels would be given advance notification of the date and time of any blasting activities.

- If blasting was necessary, a blasting plan would be developed and approved by the USFS, BLM, Reclamation, and any other appropriate regulatory agencies. Elements of the blasting plan are presented in Section 3.8, Public Health and Safety and Hazardous Materials.

3.6.2.3 Impacts from the Proposed Action

Noise Generated by Construction, Operation, and Maintenance Activities

Most of the construction-related noise for the transmission line segments would involve widening existing or new ROW corridors. Equipment used to develop these ROW would involve removal of vegetation and trees, construction of transmission line structures (e.g., dig pole holes, set poles, backfill hole with excavated material, and string transmission line wires), and transport of equipment and supplies to and from the site.

Whenever possible, the project would use existing access roads, although upgrades to some of these roads would be required. In addition, the project would require construction of an estimated 4.4 mi of new roads to and within the transmission ROW. These would be spur roads mostly from existing graded dirt/gravel access roadways to points for individual key pole locations. Because of the terrain, helicopters would be used for construction support and to remove trees on the eastern part of the project area. Helicopter noise impacts in the project area are discussed separately.

Many of the project features would require periodic maintenance after initial construction. These maintenance activities could include (1) regrading of access roads to maintain erosion control features, (2) additional and seasonal brush and tree trimming, and (3) general transmission line and pole repairs. Noise from these activities would be similar to construction noise for the project, because the activities would involve the use of vehicles, heavy equipment, and other portable power equipment used during construction. Maintenance-related noise levels would be similar to those related to construction, although they would be less frequent and intense. Routine inspection and maintenance would be on the order of once a year, and vegetation management would be on the order of once every 5 years. Therefore, the noise impacts and proposed mitigation measures associated with construction would also apply to project maintenance activities.

Noise levels generated during construction would vary and depend on the construction phase. Construction of a transmission line can be divided into the following phases: (1) ground clearing and site preparation; (2) foundation and concrete pouring at the Weaverville Substation; (3) pole erection; (4) wire pulling and installation; and (5) cleanup.

During the construction period, a variety of heavy equipment would be used along the proposed ROW and at the substations. Average noise levels for typical construction equipment range from 74 dB(A) for a roller to 101 dBA at a pile driver (impact) (Hanson et al. 2006). Except for the pile driver and rock drill, most construction equipment generates noise levels of 75 to 90 dBA at a distance of 50 ft. In general, the dominant noise source from most construction equipment is a diesel engine without sufficient muffling, which is continuously operating around a fixed location or with limited movement. In a few cases, noise generated by pile driving or pavement breaking would dominate. When a known noise-sensitive receptor (e.g., school, hospital) is adjacent to a construction project and/or stringent local ordinances or specifications apply, detailed impact analysis is warranted. However, it is adequate for a general assessment of construction to assume that only two of the noisiest pieces of equipment would operate simultaneously in order to estimate noise levels at the nearest receptor (Hanson et al. 2006). Composite noise levels from most of general construction activities are estimated to be about 90 dBA at 50 ft from the source.

For this analysis, the two noisiest pieces of equipment were assumed to operate continuously at a fixed location, with the highest composite noise level of 91 dBA at a distance of 50 ft. These activities would produce estimated noise levels of about 62, 56, and 50 dBA at 0.25, 0.50, and 1 mi, respectively, from the construction site. Areas within 0.25 mi of the construction site would exceed the significance criteria of 60 dBA, but impacted distances would be much shorter if other attenuation mechanisms, such as ground effects and air absorption, were considered.

Most construction activities would occur during the day, when noise is better tolerated than at night, because of the masking effects of background noise. Nighttime noise levels would drop to the background levels of a rural environment because construction activities would not occur at night. Accordingly, noise levels associated with construction activities are expected to be temporary (occurring intermittently over a period of about few weeks at one location at most) and local in nature.

The proposed project transmission line construction activities would come within approximately 800 to 4,000 ft of isolated residences near the community of Lewiston during the construction of Segment 1 and/or along the southern portion of Segment 2. In addition, construction would occur near the USFS Ackerman Campground during the initial construction of Segment 1 and near the Trinity River Fish Hatchery during the later portion of construction for Segment 1. General distances to these noise-sensitive areas are as follows:

- Ackerman Campground (approximately 1,000 ft),
- Isolated residential areas near Jessup Gulch Road (approximately 4,000 ft),
- Trinity River Fish Hatchery (approximately 100 to 200 ft), and
- Residential areas near the community of Lewiston (approximately 800 ft).

The remaining portions of the proposed transmission line pass through an undeveloped area with few, if any, noise-sensitive areas. These rural portions of the transmission line include the central portion of Segment 1, the northern portion of Segment 2, and all of Segment 3. Likewise, the proposed Weaverville Switchyard is in a rural nonsensitive-to-noise area. Therefore, construction noise impacts to these locations would not be significant because they would not represent a sensitive land use.

Noise impacts to campers near the Ackerman Campground in the area would depend on the distance from the construction activities. The nearest camp site is approximately 1,000 ft from initial transmission line construction activities. Noise levels at the campground were estimated to be about 65 dBA, which is above the 60 dBA significance criterion. Furthermore, measured noise levels given in **table 3.6-3** for the Ackerman Campground averaged approximately 47 dBA. Therefore, construction noise levels would result in an estimated short-term increase of up to 18 dBA. This increase would be noticed at camping locations nearest the construction area during initial construction of the transmission line, because it represents almost four times the perceived loudness currently at the site. However, the transmission lines near the campground and on the eastern side of the campground are not heavily forested, so construction activities would be very short, lasting a few weeks at most. This would reduce short-term noise impacts at the campground. Noise levels would quickly decrease as construction activities moved to the eastern side of Lewiston Lake to approximately 57 dBA. Noise levels at the campground from construction along rest of the transmission line ROW (Segment 1) would be less than current baseline levels.

Several isolated residential areas are located along Jessup Gulch Road. The closest residential areas to the proposed transmission line ROW is approximately 4,000 ft away. Measurements given in **table 3.6-3** of noise at the end of Jessup Gulch Road averaged approximately 46 dBA. Construction noise level estimates at these residences would be around 53 dBA, which is below the established 60 dBA criterion. In addition, a number of terrain and other features (e.g., trees and vegetation) would reduce these noise levels to near baseline levels. Therefore, impacts to these residential areas would not be significant.

Noise measurements at the Trinity River Fish Hatchery would range from approximately 79 to 85 dBA, which is above the 60 dBA level of significance. Furthermore, measurements given in **table 3.6-3** of noise near the fish hatchery averaged about 58 dBA. This represents an increase of 21 to 27 dBA over existing levels, or four to seven times the current perceived loudness. Approximately five pole footings would be constructed near the fish hatchery. In addition, the ground is relatively level and the trees and brush-clearing activities are minimal when compared to other sections of the transmission line ROW. Consequently, these elevated noise levels would be periodic and occur over a relatively short period of time (e.g., a few weeks) and so would not represent a long-term significant impact.

Noise impacts to residents near the community of Lewiston would depend on the distance from the construction activities to the nearest residential dwelling. The nearest residential area is along Deadwood Road toward the southern portion of Segment 2. This residential area is approximately 800 ft to the west of construction activities. Estimated noise levels from construction would be about 67 dBA at the nearest residential location. Exiting noise levels along this portion of the transmission line are also affected by Trinity River flow and traffic along Trinity River Boulevard and limited traffic along Rush Creek Road west of the Trinity River. Although noise level readings were not made along this section of the transmission line, estimates could be made of noise levels at the Trinity River Fish Hatchery, which is near the Trinity River. The background noise level from the river was approximately 54 dBA at 300 ft, which is the estimated distance from the river to the nearest resident. Noise levels along Trinity River Boulevard were projected to range from 50 to 70 dBA at 50 ft. Therefore, the overall current noise environment at these residences would be approximately 57 to 58 dBA during the day. Although these noise levels are near the 60-dBA significance level, construction noise would elevate the noise above the established levels. As a result, construction noise would result in a short-term noise impact to the local residents.

Implementing of the EPMs would reduce potential impacts related to construction, operation, and maintenance to less than significant levels.

Noise Generated by Logging

The main logging noise source is chainsaws used for topping and felling of trees, trimming or removal of limbs, and cutting logs into transportable sizes. In the Noise Pollution Clearinghouse Special Report (NPC 2005), several models of chainsaws were tested for noise levels during idling and under load conditions. The results of the tests indicated noise levels ranged from approximately 86 to 91 dBA at 25 ft under the no load condition and between 106 and 112 dBA at 25 ft under maximum load. The noise levels for idle conditions would be at or below those for construction activities. Therefore, the noise impacts provided in the previous section would not change.

Assuming an average noise level of 109 dBA at 25 ft for load condition would result in a noise level of approximately 103 dBA at 50 ft, or a level that is 12 dBA higher than the highest composite noise levels from construction activities estimated previously. Therefore, chainsaw noise levels at the various noise-sensitive locations identified above would be about 77 dBA at the Ackerman Campground, 65 dBA at the Jessup Gulch Road area, 91 to 97 dBA at the Trinity River Fish Hatchery, and 79 dBA along Deadwood Road. These noise levels would be noticed at all of these locations and would represent a short-term noise impact to these noise-sensitive receptors because levels are above 60 dBA. However, these noise levels would be short-term and would not occur over prolonged periods.

Noise Generated by Blasting

Blasting is anticipated for the project at project locations where large rocks or bedrock would be encountered when holes were being dug for poles or anchors. Two types of noise sources are associated with blasting operations. The first noise source is noise from the drilling of holes to insert the blasting agents. The second noise source is noise generated as a result of rapid overpressure changes from the blast. Both of these noise sources produce elevated noise levels that could result in a significant impact.

Drilling into rock can involve the use of pneumatic rock drilling equipment. Noise levels generated by rock drilling activities depend on the type of equipment, type of power source (internal combustion versus electrical), and type of material to be drilled (e.g., hard rock, loose rock, or soil). Noise levels for rock drilling are about 98 dBA at 50 ft (Hanson et al. 2006).

Unlike the noise from construction equipment, which tends to be fairly steady, blasts create a peak, short-lived noise. These blasts are perceived by a human receptor as a “boom” and are startling and a nuisance. However, blasting activities associated with the project would represent more of a muffled boom than a loud blast (as depicted in movies). These booms normally last less than one-half second.

Blast noise sources are normally measured on the C-weighted scale (dBC), because this scale is more representative of the human perception of low-frequency sound associated with loud noises, such as blasting. Maximum noise levels resulting from blasting would be less than 120 dBC. Such noise levels could create adverse reactions for nearby sensitive receptors.

Blasting could create local ground vibrations. The character of the blast and ground vibrations would depend on various factors, such as the type of soil/rock, type of explosive, amount of explosive used, depth of explosion, and meteorological conditions. Under most conditions, ground vibrations would not affect or damage property outside a 300-ft radius from the point of blast. Given the distance from the transmission line route to noise-sensitive locations, vibration-related impacts would be considered insignificant if blasting did occur.

The mountain areas are the most likely locations for blasting to occur. Few residential or other human sensitive areas are located in these areas. There is a low probability that blasting would occur, especially near or adjacent to sensitive receptors. If it did occur, it would be of short duration and therefore would be less than significant.

As a result of implementing the EPMs listed above and in **table 2-2**, impacts would be minimized.

Noise Generated by Helicopter Use for Construction

The principal sources of helicopter noise are the main rotor system and the engine (Raney and Cawthorn 1991). The main noise source associated with helicopters is rotor noise. Rotor noise is composed of both (1) periodic noise, which includes “blade slap,” which is primarily a function of rotor blade tip speed (i.e., its sound level increases with tip speed) and to a lesser degree the number of blades, and (2) broadband noise, which is due to nonperiodic aerodynamic interaction with the rotor.

Helicopter noise levels range from 77 to 84 dBA during takeoff and from 72 to 77 dBA during landing (distance not provided) (Golden et al. 1979). Sound pressure levels for a helicopter in level flight and traveling at an altitude 500 ft with an airspeed of about 60 knots would range from about 77 to 94 dBA during the four seconds before and after passing directly overhead (Raney and Cawthorn 1991).

Noise levels associated with helicopter flights would depend on a number of factors such as the type of helicopter, load weight, altitude, and weather conditions. On the basis of trips per hour, the L_{eq} level at 500 ft from a helicopter would be estimated to be around 60 dBA, the significance level.

FAA regulations specify a minimum altitude of 1,500 ft for flying over populated urban areas. However, because most of the project area is rural or undeveloped, adherence to the FAA requirements would not be mandatory. In addition, helicopters would be delivering equipment, personnel, and/or other items to locations inaccessible by surface-transportation vehicles and also be used to remove harvested trees to truck loading areas. Therefore, they would land at these inaccessible locations or fly low to the ground surface to deliver loads or remove trees. Helicopters with loads, however, would not be flying over occupied areas for safety reasons.

Helicopter operations for the project are projected to average approximately 60 trips per day. The proposed location of helicopter landing areas near the project area is shown in chapter 2, Project Description, in **figure 2-2**.

The use of helicopter(s) for construction of the transmission line is not anticipated to produce significant noise impacts for the following reasons: (1) the rural nature of the project area, (2) the short amount of time that a helicopter would spend at each site, (3) the fact that most of the helicopter operations would be less than 60 dBA near noise-sensitive receptors, and (4) the fact that the EPMs listed above and in **table 2-2** would be implemented.

Noise Associated with Operation and Construction Activities

Operational noise would be the result of corona discharge. As indicated in an earlier discussion, corona discharges are a function of transmission line voltage, circuit geometry, conductor diameter, conductor physical condition, contamination, and weather. Corona noise levels are more pronounced in high-voltage lines well above the 60-kV lines proposed for the transmission lines. For example, the audible noise level at the ROW of a 230-kV line during wet condition is approximately 39 dBA at 50 ft (approximate edge of the ROW). Furthermore, the transmission line would be designed to minimize any conductor point discharge sources, which could be a source of corona activity that would generate audible noise levels. Therefore, the corona discharge impact for the project's transmission line is considered minor and limited to areas immediately adjacent to the ROW.

The other audible noise source would be associated with substation operation apparatus, such as circuit breakers, disconnect switches, and auxiliary equipment, at the proposed Weaverville Switchyard. Audible noise from substation corona activity would be a minor source of substation noise. The specifications for electrical equipment would be developed so they would comply with the sound level required by industry standards, governing regulations, or local ordinances. This compliance would be helpful in reducing or minimizing community complaints with regard to any potential impact associated with the operation of the Weaverville Switchyard. Therefore, noise impacts would be less than significant. However, the proposed Weaverville Switchyard would be located near an occupied residence. This resident could be impacted by noise, but the impacts would be minor considering the small size of the switchyard and the expected low noise levels.

Corona activity on power lines sometimes generates unwanted electrical signals that cause interference with radio reception. The extent of the interference depends on the distance from the line to the radio receiver, orientation of the antenna, line geometry, and weather conditions. The transmission line would be designed to eliminate corona impacts on radio interference. In addition, radio interference is usually not a design problem for 60-kV lines. Therefore, impacts would be less than significant.

Television interference from transmission lines is generally not a problem and occurs only at lower frequencies. Furthermore, with the introduction of cable television, customer television interference complaints have diminished, since this technology is shielded from these interference signals. Television interference normally does not occur along low-voltage lines. Therefore, television impacts would be insignificant.

Other maintenance and operational noise impacts associated with the project transmission line would be motor vehicle traffic and the use of equipment along the transmission line ROW. Noise generated during these activities would be of short duration and in compliance with Trinity County regulations. Therefore, maintenance and operational impacts are considered to be less than significant.

3.6.2.4 Impacts from the No Action Alternative

Under the no action alternative, no facilities would be constructed, no noise would be generated, and no noise impacts would occur. Consequently, current noise levels would remain unchanged.

3.7 PALEONTOLOGICAL RESOURCES

3.7.1 Affected Environment

This section presents a baseline assessment of the potential for the presence of paleontological resources in the project area. Paleontological resources are the fossil remains of ancient life forms or their imprints or behavioral traces (e.g., tracks, burrows, residues) and the rocks in which they are preserved. These resources are distinct from human remains and artifacts, which are considered archaeological or historical materials. Fossil energy resources, such as coal or oil, are also generally excluded from the definition of paleontological resources.

Fossils have scientific and educational value because of their utility for developing an understanding of the history of life on earth and the biodiversity of the past and for developing new ideas about ecology and evolution. Some fossils also have commercial value as gemstones, collectors' items, or tourist attractions. Because of their rarity and scientific importance, vertebrate fossil remains (including bones, teeth, tracks, and traces) are often given greater protection in the policies governing fossil collection and preservation. Certain invertebrate and plant fossils may also be considered scientifically important and in need of protection; these are usually limited to specific localities under existing policy.

Knowing the type and age of the rocks is important when one is determining the potential for paleontological resources to be present. Fossils are only found in sedimentary rocks. Knowing the age of the rocks is also important for dating the age of the fossils. The geological age of the rocks is used to identify the time scale for fossil records. This geologic time scale is broken down into eons, eras, periods, epochs, and stages. The general time scale used by paleontologists is provided in **table 3.7-1**.

3.7.1.1 Resource Study Area

A discussion of the geologic formations found in the project area is provided in Section 3.4, Geology and Soils. A map showing the general geology of the project area is also provided in section 3.4 (**figure 3.4-1**). This figure shows that the rocks that are exposed in the project area are primarily volcanic and metamorphic. These formations have no potential for containing paleontological remains. However, there is a sedimentary formation called the Weaverville Formation that is crossed by about 0.5 mi of the proposed ROW. The Weaverville Formation is composed of nonmarine sedimentary deposits dating to the late Oliogocene epoch (23.8 to 33.7 million years ago [MA]) and/or the Miocene epoch (5.3 to 23.8 MA) (Fraticelli et al. 1987).

3.7.1.2 Issues of Environmental Concern

Various statutes, regulations, and policies govern the management of paleontological resources on public lands. Primary statutes for management and protection include the Federal Land Policy and Management Act of 1976 (FLPMA) (Public Law [P.L.] 94-579, codified at 43 U.S.C. 1701–1782) for the BLM; the Organic Act of 1897 (16 U.S.C. 551) for the USFS; and 18 U.S.C. 641, which penalizes the theft or degradation of property of the U.S. Government. The Federal Cave Resources Protection Act (P.L. 100-691, 102 Stat. 4546, codified at 16 U.S.C. 4301) and the

Archaeological Resources Protection Act (16 U.S.C. 470(aa) et seq.) protect fossils found in significant caves and/or in association with archeological resources.

As stated previously, fossils have scientific and educational value. Vertebrate and uncommon invertebrate and plant paleontological resources are considered significant fossil types and cannot be collected except for scientific and educational purposes under a permit. Common invertebrate and plant fossils are not considered significant resources and can be collected for recreational purposes.

Therefore, a potential significant paleontological impact would occur if construction of the transmission line or Weaverville Switchyard disturbed or destroyed valuable paleontological resources.

3.7.1.3 Characterization

The Berkeley National History Museum archives were accessed to ascertain the presence of paleontological resources within Trinity County as well as near or on the project site. The archives contained approximately 111 listings of paleontological samples found in Trinity County. However, almost all of these items were found near the communities of Hayfork and Reading Creek. Hayfork is located approximately 25 mi southwest of Weaverville, and Reading Creek is located approximately 10 mi southwest of the project site, south of the community of Douglas City.

All of the paleontological resources found in Trinity County were plant fossils. They were of the Magnoliopsida, Gymnospermopsida, Lilopsida, or Filicopsida classes. In addition, all of the paleontological items were from the Tertiary period and Miocene epoch (approximately 23.8 to 5.3 MA).

The Weaverville Formation contains deposits that date to the Oliogecene epoch (23.8 to 33.7 MA) and/or the Miocene epoch (5.3 to 23.8 MA). Distinctive fossils dating to the Oliogecene epoch include mammals (rodents), bird (eggs), and invertebrates. Distinctive fossils dating to the Miocene epoch include mammals (such as early horses, primates, marsupials, and carnivores), crocodilians, alligators, lizards, turtles, amphibians, fish, invertebrates, birds (eggs), plants, and pollens. No vertebrate fossils have been found in Trinity County.

3.7.2 Environmental Consequences

This section presents an analysis of potential impacts associated with finding paleontological resources along the proposed transmission line ROW and at the proposed Weaverville Substation. Specifically, this section describes potential project impacts on paleontological resources and mitigation measures as required.

3.7.2.1 Standards of Significance

Potential impacts identified for this analysis are based on the “paleontological sensitivity” of geologic formations that would be encountered during construction of the project alignments. Paleontological sensitivity is an estimate of the likelihood that fossils will be discovered during excavations in a given area. However, this estimate does not measure the significance of individual fossils that might be present or discovered in an area. Individual fossils that were discovered would have to be examined to determine their nature, age, and scientific value.

The sensitivity standards of the Society of Vertebrate Paleontology are used for determining the sensitivity of finding paleontological resources within the project area. These national standards have four general classifications of sensitivity. The sensitive classes are provided as follows:

- *High sensitivity.* Rock units from which vertebrate or significant invertebrate fossils or significant suites of plant fossils have been recovered are considered to have a high potential for containing significant nonrenewable fossiliferous resources.

- *Low sensitivity.* Reports in the paleontologic literature of a field survey by a qualified vertebrate paleontologist may lead to a determination that some areas or units have a low potential for yielding significant nonrenewable fossiliferous resources.

- *Undetermined sensitivity.* Specific areas underlain by sedimentary rock units for which little information is available are considered to have undetermined fossiliferous potential.

- *No sensitivity.* Metamorphic and granitic rock units do not yield fossils and therefore have no potential to yield significant nonrenewable fossiliferous resources.

Project construction activities would have a significant impact on paleontological resources if they (a) were considered scientifically significant and identified as poorly known species, (b) displayed preservation of soft tissues or delicate structures, (c) showed pathologies or injuries, or (d) were unusually large for the species. A group of fossils or fossil beds containing specimens showing paleoecological relationships (e.g., symbiosis, parasitism, or predation) in association with datable materials (e.g., radiometric, paleomagnetic, or index fossils) would be considered scientifically significant. Loss of unique specimens, with the associated loss of related scientific knowledge, would also be considered a significant impact.

Unless otherwise noted, all identified impacts are considered to be potentially significant adverse impacts. Corresponding mitigation measures, unless otherwise noted, are expected to be sufficient to reduce impacts to a less-than-significant level.

3.7.2.2 Environmental Protection Measures

Although the likelihood of finding paleontological resources in the project area has been determined to be very low, there is always a possibility of finding these resources during construction. Therefore, project construction personnel would be introduced to the recognition of fossils as part of the environmental training program established for construction of the project. If a fossil was uncovered, stop work procedures would be implemented in the area, and a qualified paleontologist would be consulted to evaluate the resource.

3.7.2.3 Impacts from the Proposed Action

As indicated in the paleontological baseline, most of the rocks found in Trinity County have no potential for containing paleontological resources. The Weaverville Formation is crossed by 0.5 mi of the project ROW and has been shown to contain paleontological resources. The Berkeley National History Museum archives had 111 listings of paleontological samples found in Trinity County, but only four samples were identified as being from locations near the project area (e.g., Weaverville area). This information indicates that the area has a “low sensitivity” for finding scientifically significant fossils. Therefore, potential paleontological impacts would likely be insignificant.

3.7.2.4 Impacts from the No Action Alternative

Under the no action alternative, no facilities would be constructed and no disturbance or activities would occur beyond existing conditions. Therefore, there would not be a potential to impact unknown paleontological resources.

3.8 PUBLIC HEALTH AND SAFETY AND HAZARDOUS MATERIALS

3.8.1 Affected Environment

This section determines the general baseline conditions for assessing the potential public health and safety impacts that could be associated with the development of the project — specifically, those baseline conditions related to public health and safety, hazardous materials, and EMF. Issues concerning corona noise associated with electrical discharges from the transmission line are discussed in Section 3.6, Noise.

3.8.1.1 Resource Study Area

The resource study area for the project would be concerned with the current storage, uses, or disposal aspects of hazardous material. In addition, issues concerning electric fields and magnetic fields associated with transmission lines and substations must be examined as well as general work safety and public health concerns.

Hazardous Materials

Hazardous materials are generally defined as substances that, because of their chemical, biological, or physical nature, pose a potential risk to the life, health, property, or the environment if released. Hazardous materials are normally categorized into nine major hazard classes by the U.S. Department of Transportation (DOT). These classifications include (1) explosives (e.g., ammunition, dynamite, and fireworks), (2) gases (e.g., propane, oxygen, and helium), (3) flammables (e.g., gasoline, alcohols, and fuel oils), (4) flammable solids (e.g., matches, magnesium, and sodium), (5) oxidizers (e.g., ammonia nitrate, hydrogen peroxide, and oxygen), (6) poisons (e.g., pesticides, herbicides, and arsenic), (7) radioactive hazardous materials (e.g., uranium, iridium, and plutonium), (8) corrosive hazardous materials (e.g., hydrochloric acid, battery acid, and formaldehyde), and (9) miscellaneous hazardous materials (e.g., asbestos and biological agents).

A variety of Federal, State, and local laws, ordinances, regulations, and/or standards have been established to protect public health and safety and address concerns regarding the storage, use, and disposal of hazardous materials. These hazardous material regulations deal with a variety of conditions, such as protecting the environment from contamination; preventing excessive exposure of construction, operational, and maintenance workers to hazards; and/or preventing exposure or injury to surrounding community sensitive receptors and the environment from hazardous material releases or disposal. The main concerns regarding hazardous material are the past and current (1) environmental risks and effects regarding on-site releases of known contaminants and/or (2) impacts associated with nearby potential off-site releases reaching the project area.

The analysis of hazardous material issues addresses land use categories because they typically reflect vulnerability of populations to a hazardous material incident. Land uses can be generally categorized into four groups on the basis of their relative sensitivity of exposure to a hazardous material release. The four classifications are as follows:

- *Highly sensitive.* Schools, hospitals, convalescent homes, day care centers, and other facilities or areas where large numbers of people concentrate and where these people may require assistance to evacuate because of their age, physical condition, or large number;

- *Highly to moderately sensitive.* Multifamily (e.g., apartment complexes) and single-family residential areas;

- *Moderately sensitive.* Commercial areas (e.g., shopping centers and shopping malls) and industrial areas; and

- *Low sensitivity.* Rural areas (e.g., agricultural areas, farms, orchards, and nurseries) and open space (e.g., undeveloped areas, golf courses, and beaches).

Electric and Magnetic Fields

This section provides a brief overview of EMF, discusses public health concerns associated with EMF, and presents information regarding whether present EMF levels along transmission lines pose public health effects. EMF collectively describes electric and magnetic fields that are created by electric voltage (electric field) and electric current (magnetic field), as discussed below.

Electric Fields Overview

The voltage (electrical pressure) on an object creates an electric field. Any object with an electric charge on it has a voltage at its surface caused by the accumulation of more electrons on that surface as compared with another object or surface. The voltage effect is not limited to the surface of the object, but exists in the space surrounding the object in diminishing intensity. Electric fields can exert a force on other electric charges at a distance. The change in voltage over distance is known as the electric field. The units describing an electric field are V/m or kV/m. These units are a measure of the difference in electrical potential or voltage that exists between two points, 1 m apart. The electric field is stronger near a charged object and decreases with distance away from the object. Electric fields are also weakened or shielded by materials that conduct electricity (e.g., vegetation, buildings, or fencing) within a field.

Most electric power transmission lines within the United States carry alternating current (AC) and create 60-Hz electric fields. The Hz is used to measure the frequency of an AC electric field. One Hz is equal to one AC cycle per second (l/s). This frequency lies on the low end of the range of EMF (classifications) shown in **table 3.8-1**. Thus, whereas V/m or kV/m expresses the electric pressure at a distance, Hz measures the frequency within that electric field.

AC electric fields result from the elevated voltage of the transmission line conductors with respect to the ground. Electric field strengths from a transmission line decrease with distance away from the outermost conductor, typically at a rate of the inverse of the distance squared ($1/d^2$) for three-phase conductors. As an example, if the electric field strength is 10 kV/m at a distance of 1 m away, it would be approximately 2.5 kV/m at 2 m away, and 0.625 kV/m at 4 m

Table 3.8-1 Frequency Levels of Various Sources

Sources	Frequency Range (Hz)[a]		
X rays, about 1 billion Hz, can penetrate the body and damage internal organs and tissues by damaging important molecules like DNA. This type of intensity is identified as "ionization."	Gamma rays X-rays Ultraviolet rays		10^{22} 10^{20} 10^{18} 10^{16}
Sun Microwaves, several billion Hz, can have "thermal" or heating effects on the body tissues. Radio and cell phones in a range of 800 to 900 mHz.			10^{14} 10^{12} 10^{10} 10^{8} 10^{6}
Emissions from computers and similar equipment.	Very low frequency (VLF) in the range of 3,000 to 30,000 Hz		10^{4}
Power-frequency EMF (50 to 60 Hz) carry very little energy and have no ionizing effects and usually no thermal effects. They can, however, cause very weak electric currents to flow in the body.	Extremely low frequency (ELF) in the range of 3 to 3,000 Hz Direct current (DC)		10^{2} 0

[a] The superscript numbers provided for frequency indicate values to the tenth power (e.g., a designation of 10^4 indicates 10 × 10 × 10 × 10).

Source: NIEHS (1996).

away from the conductor. In contrast, the electric field strength from a single conductor typically decreases at a rate of approximately the inverse of the distance (1/d). This would result in an electric field strength of 10 kV/m at 1 m away and decrease to approximately 5 kV/m at 2 m away, and 2.5 kV/m at 4 m away. Electric field strengths for a transmission line remain nearly constant over time, because the voltage of the line is kept within the bounds of about ±5% of its rated voltage. Transmission line electric fields are affected by the presence of grounded and conductive objects. Trees and buildings, for example, can significantly reduce ground level electric fields by shielding the area nearby (Deno and Silva 1987).

Electric power substations also create electric fields because of voltage on station components (e.g., transformers, circuit breakers, and capacitors). The components of a substation act as point-sources of an electric field, similar to appliances in a home. As such, the electric fields of electrical substation components decrease rapidly, at a rate of approximately the inverse of the distance cubed ($1/d^3$). For example, a field of 10 kV/m at 1 m away would be approximately

1.25 kV/m at 2 m away and 0.156 kV/m at 4 m away. This contrasts with the line-source characteristics of transmission lines that decrease as approximately the inverse of the distance squared ($1/d^2$). Substation electric fields outside the established perimeter area are typically very low because of their distance from the electric equipment as well as the self-shielding of metallic substation components. Furthermore, the metal chain-link fencing surrounding a typical substation also provides grounding of the electric field (Deno and Silva 1987).

Magnetic Fields Overview

Electric current flowing in a conductor (e.g., electric equipment, household appliances, and power circuits) creates a magnetic field. A commonly used magnetic field intensity unit of measure is the milligauss (mG). As with electric fields, the magnetic fields from electric power facilities and appliances are caused by the flow of 60-Hz AC. Thus, power frequency magnetic fields reverse direction at a rate of 60 cycles per second, corresponding to the 60-Hz operating frequency of the power systems in the United States.

Similar to electric field strengths, magnetic field strengths decrease with distance away from the line. Unlike electric fields, however, magnetic fields are not shielded by materials that conduct electricity, so they are more difficult to shield. And while electric fields vary little over time, magnetic fields are not constant over time and vary continuously as transmission line current changes in response to increasing and decreasing electrical load.

Electric power substations also create magnetic fields because of current flow on station components. Because a substation is a collection of components that can each be a magnetic field source, a substation complex is often treated as a single point-source for external field measurements taken at a distance. The magnetic field strength of point sources diminishes rapidly as the distance from the source becomes larger than the dimensions of the source itself (e.g., a transformer). Therefore, at distances on the order of 50 ft or more from the substation fence, the external magnetic field would have decreased to a much lower level than the level inside the substation. In contrast to electric fields, the substation magnetic fields are not affected significantly (shielded) by most common objects.

Electrical transmission and distribution systems are not the only sources of magnetic fields. Within homes and workplaces, local sources of magnetic fields include building wiring and plumbing, electric blankets, electric stoves, computer terminals, bedside clocks, ceiling fans, and other appliances that people may use for prolonged periods. Indeed, some of the common sources of higher magnetic field exposure are appliances and electrical devices found within the home and workplace. Examples of typical home, workplace, and other appliance magnetic field strengths with distance are provided in **table 3.8-2**.

The duration of the exposure from many household appliances is typically much shorter than that from other constant sources such as electrical wiring in walls, lighting fixtures, and radios that are constantly in use. Thus, exposure from magnetic fields (as well as electric fields) occurs continuously in the home and/or workplace and is not simply a function of living or working near a power line or facility. Therefore, exposure depends upon the many sources and field strengths present where a person lives, works, or otherwise spends time.

Table 3.8-2 Examples of Magnetic Field Strength of Home and Other Appliances

Appliance	Mag. Field Strength (mG) At 1 Foot	At 3 Feet	Appliance	Mag. Field Strength (mG) At 1 Foot	At 3 Feet
Aquarium pump	0.35 to 18.2	0.01 to 1.17	Band saw	0.51 to 14.2	0.05 to 0.75
Can opener	7.19 to 163	1.30 to 6.44	Clock	0.34 to 13.2	0.03 to 0.68
Clothes iron	1.66 to 2.93	0.25 to 0.37	Coffee machine	0.09 to 7.3	0.0 to 0.61
Computer monitor	0.20 to 134	0.01 to 9.37	Copier	0.05 to 18.4	0.0 to 3.39
Desktop light	32.8	1.21	Dishwasher	4.98 to 8.91	0.84 to 1.63
Drill press	0.21 to 33.3	0.03 to 8.35	Fax machine	0.16	0.03
Food processor	6.19	0.35	Garbage disposal	2.72 to 7.79	0.19 to 1.51
Microwave oven	0.59 to 53.3	0.11 to 4.66	Mixer	0.49 to 41.2	0.09 to 3.93
Portable heater	0.11 to 19.6	0.0 to 1.38	Printer	0.74 to 43.1	0.18 to 2.45
Portable fan	0.04 to 85.6	0.03 to 3.12	Radio	0.43 to 4.07	0.04 to 0.98
Electric range	0.60 to 35.9	0.05 to 2.83	Refrigerator	0.12 to 2.99	0.01 to 0.60
Scanner	2.18 to 26.9	0.09 to 3.48	Sewing machine	3.79 to 7.70	0.35 to 0.45
Tape player	0.13 to 6.01	0.01 to 1.66	Television	1.80 to 13.0	0.07 to 1.11
Toaster	0.29 to 4.63	0.01 to 0.47	Vacuum cleaner	7.06 to 22.6	0.51 to 1.28
VCR	0.19 to 4.63	0.01 to 0.41	Vending machine	0.46 to 5.05	0.02 to 0.59

Source: HHSA (2000).

Studies conducted by the Electric Power Research Institute (EPRI) indicate that the general background magnetic field level away from any appliances ranges from 0.5 to 4.0 mG in the typical U.S. home. Average values were estimated at around 0.6 mG (NIEHS 1996). Another study conducted by the California EMF Program found the following San Francisco Bay area home exposure levels:

- 10% were exposed to 0.43-mG levels,
- 25% were exposed to 0.54-mG levels,
- 50% were exposed to 0.71-mG levels,
- 75% were exposed to 0.98-mG levels, and
- 90% were exposed to 1.58-mG levels.

EMF-Related Human Health Concerns

Over the past three decades, there has been a significant research effort addressing concerns over the potential health effects from exposure to EMF. Concerns include a variety of diseases and other health effects, such as reproductive effects and cancer. The possible effect of EMF on human health was originally focused on electric fields. However, much of the recent research has focused on magnetic fields.

In general, these studies have found no conclusive evidence of harmful effects from typical transmission line and substation electric and magnetic fields. However, some studies have reported the potential for harmful effects to humans. Complicating the resolution of this issue is the lack of knowledge about what characteristics of electric or magnetic field exposure need to be considered to assess possible human exposure effects. The exposure factor most often studied is intensity or magnitude of the field resulting in exposures. The studies are often complicated by other nonelectric factors that could affect the findings.

There is a consensus among the medical and scientific communities that there is insufficient evidence to conclude that EMF causes adverse health effects (e.g., AMA 1994, NRC 1997, NIEHS 2002). Neither the medical nor scientific communities have been able to provide any foundation upon which Federal or State regulatory bodies could establish a standard or limit for exposure.

A wide range of magnetic field frequencies and intensities has been studied in the laboratory to attempt to elicit biological responses and identify the conditions and mechanisms under which they can be produced. No accepted biophysical mechanism currently exists that can explain readily how a cell could respond to low-intensity, low-frequency magnetic fields. Any imposed external electric and magnetic fields must compete with fundamental physical fluctuations (e.g., thermal noise) and endogenous background biological fields (e.g., those generated by the normal activity of the heart, brain, skeletal muscle, and smooth muscle in the gut and airways). Most laboratory studies have involved exposures of from hundreds to thousands of times higher than those typically found in residential background and some occupational settings. Despite several thousand studies found in the literature, relatively few biological responses are confirmed to occur with exposure to time-varying magnetic fields at intensities of less than 1,000 mG. Those that have been confirmed have not been clearly linked to adverse health effects. As a result, there is a general consensus among the medical and scientific communities that there is insufficient evidence to conclude that EMF causes adverse health effects.

Public Health and Safety

Public health and safety encompasses a variety of concerns, ranging from worker safety issues to hazards associated with the general public. Generally, construction worker health and safety hazards are associated with the job function being performed which includes the use or handing of hand or power tools, welding and cutting operations, electrical shocks or electrocution, scaffolding bracing, shoring during excavation, demolition activities, uses of heavy equipment, blasting and the use of explosives, and ladder falls.

Although the general public can be exposed to some of the same hazards associated with workers' job functions, these activities are not part of their everyday activities, so exposure is reduced. Generally, public health and safety issues are associated with activities being performed around the house or yard or during recreation.

3.8.1.2 Issues of Environmental Concern

Issues of environmental concern for health and safety are associated with electric shock, EMF, and worker safety. Hazardous materials concerns are associated with the use or mishandling of chemicals, which could result in an impact to the soil, groundwater, or surface water during construction, maintenance, or operation. Additional concerns would be associated with the use of herbicides along the transmission line ROW and at the proposed Weaverville Switchyard.

3.8.1.3 Characterization

Hazardous Materials

The project would be located in an area that is largely open space — public and private land used mostly for forestry and recreational activities. The project transmission line area is very sparsely populated, except for limited locations near the community of Lewiston and near the proposed Weaverville Switchyard south of Weaverville; otherwise, the project area has few residences. Although the existence of hazardous materials along the alignments is possible, existing land use within the area is limited. In additional, the steep terrain along sections of the transmission line ROW limits public activities and the potential risk of use or disposal of hazardous materials. Therefore, most of the transmission line ROW is not expected to have a substantial presence of hazardous materials within the alignment. However, certain small industrial activities (e.g., car repair, pesticide spray, metal plating operations, or wood treatment companies) or historical mining activities within the project area may have resulted in hazardous material contamination to soil, surface water, and/or groundwater resources. In addition, it is possible that historical or illegal disposal has introduced hazardous materials to areas within the project transmission line alignments. The actual presence of such materials within the proposed transmission line ROW has not been identified.

Electric and Magnetic Fields

As indicated above, both electric and magnetic field strength decreases with distance. Examples of the electric and magnetic field strength decreasing with distance from a 115-kV and a 230-kV transmission line are provided in **table 3.8-3**.

When comparing the magnetic field strengths with distances in **table 3.8-3** with those in **table 3.8-2**, the magnetic strength from a 115-kV transmission line would be at or below that of many appliances and near that found in most home or workplace exposures. Therefore, it is generally agreed that EMF effects beyond the ROW of a 115-kV transmission line would result in less than significant human health effects or concerns.

The current 12-kV distribution line from the Trinity Substation to the community of Lewiston would have significantly lower values than the 115-kV line example given in **table 3.8-3**. However, the distribution line is not presently energized and does not represent a source of EMF or an impact to public health or safety.

Public Health and Safety

The project transmission line ROW would mostly pass through undeveloped land or land used for forestry and/or recreational activities. The only current public health and safety concern associated with the proposed transmission line ROW is the existing 5.3-mi, 12-kV line running from Trinity Dam to near the community of Lewiston. A theoretical human health risk is associated with individuals climbing the transmission line poles. Electrocution is not a hazard since the line is not energized at this time. The climbing risk is minimal because of the general remote location of the line as well as general knowledge by individuals regarding the hazards

Table 3.8-3 Electric and Magnetic Field Strength Changes with Distance[a]

Strength	Distance from Transmission Line Centerline (ft)				
	Centerline	Edge of ROW	100	200	300
115-kV Transmission Line					
Electric field strength (kV/m)	1.0	0.5	0.07	0.01	0.003
Magnetic field strength (mG)	30	6.5	1.7	0.4	0.2
230-kV Transmission Line					
Electric field strength (kV/m)	2.0	1.5	0.3	0.05	0.01
Magnetic field strength (mG)	57.5	19.5	7.1	1.8	0.8

[a] Electric fields from power lines are relatively stable because voltage does not change. Magnetic fields fluctuate greatly as current changes in response to changing load. The magnetic fields above are calculated for 321 power lines with a mean load in 1990.

Source: Western (2005).

associated with climbing poles and coming into close contact with potentially energized electrical circuits.

Other construction worker and public health and safety hazards associated with the proposed transmission line project would involve falls as a result of the steep terrain in many locations along the ROW or exposure to on-site flora and fauna habitats. Other habitat-related hazards include minor injuries, with possibly more serious injuries involving rattlesnake bites, ticks (Rocky Mountain spotted fever), mosquitoes (West Nile virus), poison oak, and animal bites (rabies). Given the nature of the wilderness area along most of the project alignment, encounters with bears or mountain lions are possible. Sudden encounters with these animals can result in injury or death.

The entire project covers only about 30 acres of USFS land, and there would not be any significant change in fire condition classification in the project area. Fuels are a concern of the USFS, and the project would be using lop and scatter or chipping and hauling of slash to reduce fuel loads. Therefore, because fire-related fuels would be treated, the effect on fire condition class is anticipated to be less than significant. Fire risk posed by the project is not discussed further in this EIS.

3.8.2 Environmental Consequences

This section examines potential public health and safety impacts that could be associated with the construction, maintenance, and/or operation of the project. Specific impacts examined in this section are public safety and health concerns as well as hazardous material use and disposal and EMF exposure. The section also contains recommended mitigation measures to reduce potential adverse impacts, if required.

3.8.2.1 Standards of Significance

The public health and safety and hazardous material methodology used to determine potential impacts associated with the project would include comparing the current baseline condition(s) with situations associated with the implementation of the project. The following sections provide summary analyses of the potential public health and safety as well as hazardous material and EMF impacts associated with the project.

Hazardous Materials

The methodology used for analyzing impacts included identifying general types of hazardous materials and techniques that would likely be used during project construction, operation, and maintenance. Potential impacts associated with hazardous materials would be considered significant if the project would:

- Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials;
- Create a significant hazard to the public or the environment through reasonably foreseeable accident conditions involving the release of hazardous materials into the environment;
- Create hazardous emissions or the handling of hazardous or acutely hazardous materials, substances, or waste near a sensitive location as provided in section 3.11; and/or
- Be located on identified hazardous material contamination sites and/or would create a significant public safety hazard as a result of further soil, groundwater, or surface water contamination.

Electric and Magnetic Fields

Estimates of existing and future EMF conditions along the project transmission line alignments were prepared using project data. It should be noted that ground clearances and span lengths would vary throughout the length of the transmission lines, so general clearance and span length were evaluated as they relate to locations of human exposures.

For the purposes of this analysis, extended exposure of members of the general public to project-related EMF that would exceed levels established by the American Conference of Governmental Industrial Hygienists (ACGIH 1999) or the International Commission on Non-Ionizing Radiation Protection (ICNIRP 1998) would be considered a potentially significant impact. In addition, the generation in objects (e.g., fences or other conductors) of induced currents of greater than 5 mA would be considered a significant impact.

Public Health and Safety

The public health and safety analysis was conducted to determine potential increases in risk of the safety and/or health of populations or sensitive environments within the project area. In general, the project would be considered to have a significant public health and safety impact if construction and/or operation would:

- Impair implementation of, or physically interfere with, an adopted emergency response plan or emergency evacuation plan;

- Conflict with Federal, county, or other responsible agency requirements with jurisdiction over worker or public health safety standards; and/or

- Conflict with aircraft safety standards at public or private airports or conflict with safety standards associated with flight patterns or aircraft use.

3.8.2.2 Environmental Protection Measures

EPMs for health and safety from **table 2-2** include the following items discussed here.

Blasting, using small charges, for some pole excavations might possibly be required, and a blasting plan would be developed for these operations. The development of a blasting plan would be in accordance with recognized industrial standards and governmental regulations.

Explosives for construction activities would be transported and used by a California-licensed contractor, under contract to the project proponent or specified general contractor, who would ensure compliance with State of California Safety Orders (Cal-OSHA), article 8, section 1564, and with California Vehicle Code, Division 14 requirements for vehicle transportation of explosives on public roadways as applicable. All blasting would be conducted by a subcontractor with a valid California "Blaster License" pursuant to Cal-OSHA, article 8, sections 1550–1580.

A site-specific blasting plan would be developed for the project. General elements of a blasting plan normally include:

- Designation of a qualified individual as the blast officer, who has authority over all actions and operations related to blasting;

- Lists of names, qualifications, and detailed responsibilities of all personnel involved with the blasting or who would otherwise be responsible for transporting, handling, or storing the explosives;

- List of incidental personnel and other personnel authorized to be within the danger zone during blasting operations;

- List of dates and location(s) of blasting;

- Identification of the type and quantity of explosives and detonating or initiating devices to be used at the site;

- Means of transporting explosives to the site;

- Records showing that all applicable permits and licenses have been obtained;

- Identification of minimum acceptable weather and static conditions and considerations for stray radio frequency energy and electrical current where electrical initiation will be used;

- List of standard procedures for handling, setting, wiring, and firing explosive charges;
- List of personal protective equipment (PPE) to be used or available at the site;
- Identification of minimum standoff distance and the means for clearing and controlling access to blast danger area; and
- Creation of an emergency action plan (e.g., telephone numbers of local emergency response organizations; location/telephone number of nearest medical facility, actions to be taken when a person is injured, Material Safety Data Sheets [MSDSs], etc.).

Personnel involved in excavation work would receive training in recognizing potentially contaminated soil or groundwater from the general contractor's assigned health and safety officer. Contractors or subcontractors would be trained prior to the start of work. This training would also include instructions regarding further work activities at an affected site and reporting procedures if contamination was suspected.

If soil or groundwater contamination was suspected during excavation (e.g., because of unusual soil discoloration or strong odor), the contractor or subcontractor would immediately stop work and notify the general contractor's assigned health and safety officer, who would implement appropriate health and safety procedures. Preliminary samples of the soil, groundwater, or material would be taken by an Occupational Safety and Health Administration (OSHA)-trained individual and sent to a California certified laboratory for characterization. If contamination was not found to be above regulatory limits, work would be allowed to proceed at the site. However, if contamination was found to be above established limits, the regulatory agency (e.g., RWQCB or Cal/EPA) responsible for responding to and for providing environmental oversight of the region would be notified in accordance with State or local regulations.

The project proponent, in consultation with the general contractor and regulatory agency, would complete the following steps for each site identified as having potential contamination:

- *Step 1.* Investigate the site to determine whether it has a record of hazardous material contamination, which could affect construction activities. This investigation would usually be performed as a Phase I ESA.
- *Step 2.* Perform a characterization study of the site to determine the nature and extent of the contamination that is present at the location before development activities proceed at the site.
- *Step 3.* Determine the need for further investigation and/or remediation of the soils, groundwater, or surface water conditions on the contaminated site. For example, if there would be little or no contact with contaminated materials, industrial cleanup levels will likely be applicable. If site activities could involve human contact with the contaminated materials, such as may be the case with residential use, then Step 4 should be completed. If no human contact or disturbance is anticipated, then no further mitigation would be required for the location.

- *Step 4.* If it was determined that extensive contamination contact would accompany the intended construction of the site, a Phase II environmental site investigation (ESI) involving sampling and further site characterization would be undertaken. Should further investigation reveal high levels of hazardous materials, health and safety risks would be mitigated according to Cal/EPA or RWQCB regulations or requirements. This would include the preparation of site-specific health and safety plans, work plans, and remediation plans.

Electric shock along fences running parallel to electric transmission lines from induced voltages is not a significant factor for 60-kV transmission lines. However, during construction of the proposed transmission line, Western would perform a survey along the corridor to determine if long conductors (e.g., metal fences) were present. If these conductors were identified and had the potential to generate shock, the project proponent would contact the owner of the fence and provide grounding as required by the applicable code (e.g., National Electrical Safety Code [NESC]).

Herbicides would be handled in a manner that would avoid accidental spills and ensure worker and public safety. All herbicide spill requirements would be followed, including those for containment and cleanup procedures.

Western will prepare an Aviation Safety Plan to address hazards associated with helicopter use. This plan will document landing locations, flight paths, and avoidance areas and incorporate the aviation safety measures identified in this section.

3.8.2.3 Impacts from the Proposed Action

The general public health and safety conditions identified earlier regarding the current conditions would not change as a result of construction, operation, and/or maintenance of the project. In addition, the project would not alter any emergency response plan or interfere with emergency response vehicles (e.g., fire trucks, ambulances, or police cars).

There are no public or private airports sufficiently near the proposed transmission line ROW that could interfere with normal operational flight conditions. Construction of all segments of the project would involve helicopter flights over recreation areas, creating a potential safety hazard to these areas. However, all helicopter flights for the project would be coordinated with the land management agency in advance to minimize disturbance and potential safety hazards. Helicopter flights would also be conducted in compliance with all FAA regulations, such as altitude requirements and hours of operation. Helicopter flights with loads would not be allowed over occupied areas. An Aviation Plan would be prepared before construction.

The project would follow all applicable worker health and safety standards established by Federal OSHA and Cal-OSHA requirements. As a result, the project would not involve undue risks over those of similar projects. The project would pose less than significant impacts for project implementation, because risks to construction workers would not exceed industry standards, and risk to the public would not exceed current conditions. Therefore, general public health and safety concerns will not be considered further in this impact analysis.

Other public health and safety risks would include those typically associated with electrical transmission lines, such as potential electrocution from downed lines, potential for aircraft collisions, and hazards posed by transmission structures near roads. All such risks associated with the project would be low because of its remote location and low profile. Therefore, public health and safety risk would not increase significantly over existing levels.

Public health and safety impacts associated with atmospheric emissions of hazardous materials are discussed in Section 3.1, Air Quality, and traffic hazards are provided in Section 3.10, Traffic and Transportation. Other potential public health and safety, hazardous material, and EMF concerns are examined below.

Hazardous Materials Used during Construction

Use of hazardous materials during project construction would pose potential health and safety hazards to construction workers and local environmentally sensitive locations. These hazardous material impacts would be associated with potential spills during ground clearing, pole removal and installation, wire installation operations, construction of the new Weaverville Switchyard, and potential upgrades to existing substations at Trinity Dam and Lewiston, if required. Impacts would be associated with possible blasting during pole installation and the use of hazardous substances during construction. Potential blasting impacts are examined separately in a following discussion. **Table 3.8-4** lists the hazardous materials typically used on transmission line construction projects.

Table 3.8-4 List of Hazardous Materials Typically Used during Transmission Line Construction

Two-cycle oil (contains distillates and hydrotreated heavy paraffine)	Battery acid (in vehicles and in the meter house of the substations)
ABC fire extinguisher	Ammonium hydroxide
Air tool oil	Acetylene gas
Automatic transmission fluid	Insect killer
Canned spray paint	Chain lubricant (contains methylene chloride)
Diesel de-icer	Connector grease (penotox)
Explosives (detonators, detonator assemblies [e.g., nonelectric, tubular primers, cap-type primers, ammonium nitrate fertilizers])	Contact cleaner 2000
Eyeglass cleaner (contains methylene chloride)	Diesel fuel additive
Gasoline	Gasoline treatment
Hot stick cleaner (cloth treated with polydimethylsiloxane)	Lubricating grease
Insulating oil (inhibited, non-PCB)	Methyl alcohol
Mastic coating	Paint thinner
Wasp and hornet spray (1,1,1-trichloroethene)	Antifreeze
Bottled oxygen	Puncture seal tire inflator
Petroleum products (gasoline, diesel fuel, jet fuel A, lubricants, brake fluid, hydraulic fluid)	Starter fluid
Safety fuses	Brake fluid

Detailed information about the use, storage, and disposal of hazardous materials during construction of the proposed transmission line and Weaverville Switchyard would be provided in the hazardous communication (HAZCOM) Plan developed for the project. The HAZCOM Plan would define specific procedures for vehicle refueling and servicing, transportation, and storage of hazardous materials, and disposal of hazardous wastes as well as worker safety considerations.

Contractors and suppliers would be required to submit MSDSs for all hazardous materials used for construction of the project facilities. These MSDSs would be incorporated into the HAZCOM Plan. Under applicable Federal HAZCOM regulations, personnel using specific hazardous materials must be knowledgeable and trained in safety procedures regarding their use.

Safety procedures would require construction vehicles to be serviced and fueled at least 100 ft from any sensitive areas. Refueling operations would be performed by trained personnel. Procedures would be followed to minimize the chance of a fuel spill during servicing and refueling of construction vehicles (e.g., graders, backhoes, bulldozers, and wire pullers) and other vehicles (e.g., pickups and automobiles), as well as other equipment using internal combustion engines (e.g., generators, chain saws, and portable augers). Service vehicles would be required to carry absorbent material to handle potential spills, inspected regularly for fuel leaks, and equipped with firefighting equipment. Other vehicles also carrying hazardous materials would be equipped with appropriate materials to contain a small spill should one occur during transport. Hazardous materials would be transported in DOT-approved containers and allowed only on approved access roads. Vehicles and storage containers would be properly signed, marked, and inspected for leakage and other potential safety problems prior to transportation.

Hazardous materials would be stored in manufacturer’s containers or in proper secondary containers in material yards and designated construction areas. Cleanup materials would also be stored in these areas. Hazardous wastes, including used oil, used oil filters, used gasoline containers, spent batteries, and other items, would be collected regularly and disposed of in accordance with all applicable Federal, State, and local laws. Every effort would be made to minimize the production of hazardous waste during the construction of the project. Examples include using nonhazardous substances (when available), minimizing the amount of hazardous materials used for the project or stored on-site, and recycling and filtering hazardous materials.

A road sealant could be used to suppress dust along access roads during construction. The specific type of sealant to be used has not yet been determined; however, environmentally safe road sealants are available from various sources as an agricultural by-product or in the form of a polymer specifically used to control dust. These products have been successfully used on transmission line construction projects to control dust on access roads used for construction. The materials are applied at the average rate of 250 gal per acre in a mixture diluted two-to-one with water. The materials are nontoxic. Construction contractors would be required to submit MSDSs for these materials as part of the access road plan.

Construction of the project would not use “extremely hazardous materials” or “acutely hazardous materials” above the reporting requirements defined, respectively, in Federal or California regulations. Therefore, the potential impact associated with the use of these hazardous materials during construction would be less than significant, because they do not result in excess risk to the public or the environment.

Use of Explosives

The need for blasting during construction of tower footing or pole holes is anticipated in limited instances, and the transportation and use of explosives could create an increased risk of injury to construction workers and the public. However, blasting would only be required in localized areas to break up dense rock deposits that cannot be removed by conventional construction equipment or to construct tower or pole locations in inaccessible areas. Therefore, explosives would need to be transported to the excavation site and any unused explosives transported from the specified location, because explosives would not be temporarily or permanently stored on the site. Explosive charges would be inserted into bore holes in the rock formations and detonated by an independent California-licensed contractor using trained personnel.

Because of the small blasting charges required, blasting near environmentally sensitive areas would have a low potential of damaging property near the ROW and of possibly injuring on-site workers. Implementing the identified EPMs would further reduce the potential for worker and public injury and property damage related to blasting to a less-than-significant level. Blasting risks would not be elevated above those for other similar blasting projects.

Use of Hazardous Materials during Maintenance and Operation

Use of hazardous materials during maintenance and operation of the project could pose potential health and safety hazards to operation and maintenance workers and nearby residents and the environment. These hazardous material impacts would be associated with potential spills during routine or emergency maintenance or normal operations along the transmission line and/or substations as well as operation of the new and upgraded substation and switchyard. Most of the chemicals used for maintenance or operational activities are similar to those used in construction (see **table 3.8-4**). However, the use of the chemicals listed in this table would be reduced compared with those used during construction of the project. Hazardous chemicals to be used would be brought to and removed from the site by operational and maintenance personnel rather than stored on-site for extended periods.

Mineral oil would be used in switches, circuit breakers, capacitors, and other electrical equipment at the proposed Weaverville Switchyard. Mineral oil is considered a hazardous material under California regulations. In addition, mineral oil storage or use in aboveground storage containers in levels exceeding 1,320 gal in one or multiple containers at a site is regulated under Federal standards. These regulations require the preparation of a site-specific spill prevention control and countermeasure (SPCC) plan that must address accidental releases and response requirements.

Detailed information about the use, storage, and disposal of hazardous materials during maintenance and operation of the project would be provided in an operational HAZCOM plan. This HAZCOM plan would address handling and disposal concerns associated with hazardous materials.

Western or its contractors would be required to maintain an upgraded HAZCOM plan, SPCC plan, hazardous material business (HMB) plan, and other documents, plans, or materials for the project, as needed. All of theses requirements would be in accordance with Federal, State, and local laws, ordinances, regulations, and standards. The project is also prohibited by law from treating or disposing of any hazardous materials without an approved treatment permit. Therefore, disposal of hazardous materials must be in compliance with Federal and State requirements at a facility permitted for handling and disposal of the waste. Proper implementation of these plans and compliance with regulatory requirements would be expected to result in less-than-significant impacts from hazardous material use, storage, transportation, or disposal.

Herbicides

During operation and maintenance of the project, application of herbicides may be necessary for the control of noxious weeds and to prevent regrowth of undesirable or incompatible vegetation. Herbicide application is discussed further in Section 3.2, Biological Resources, and would take place in accordance both with the EPMs described in that section and with the IVM (Western 2007a).

On USFS land, only those herbicides approved by Western and those for which a risk assessment was done by the USFS would be used. Summaries of USFS risk assessments for nine jointly approved herbicides are provided in appendix D. The summaries describe both human health risks and ecological risks. Application rates and methods used during construction and maintenance of the project would not exceed or vary from those analyzed in the risk assessments (on USFS or BLM land) or those on label instructions (on public lands). Risks to humans would be low because of the remote location of the project, which would result in low potential exposures. In those places where the project would be close to high-use areas, such as campgrounds and trailheads in the vicinity of Trinity Dam or near the Lewiston Hatchery, particular care would be taken to reduce potential human exposure to herbicides. Most of the project area, however, is removed from residences or public access points, and potential exposure would be very unlikely.

Western's best management practices for herbicide use as listed in appendix D would be followed for all applications. Certain applications of some herbicides for special use in sensitive areas were approved by Western; these areas include aquatic or riparian areas. These applications would be in accordance with the intended and approved use of particular herbicide formulations (e.g., in riparian areas or for control of aquatic vegetation necessary to maintain the project ROW). Guidance on the use of herbicides in sensitive areas is provided in the IVM (Western 2007a). The general use of herbicides to control noxious weeds is described in section 3.2.

Operation and maintenance of the project would not use extremely hazardous or acutely hazardous materials above Federal or State regulatory quantities. Therefore, the potential impact associated with the use of these hazardous materials would be less than significant.

Use of Hazardous Materials near an Existing or Proposed School

The project ROW is not located within 0.25 mi of any existing or proposed school location. On the basis of this distance and because the project would not use extremely hazardous materials or acutely hazardous materials above reporting requirements during construction, operation, or maintenance, the project is not anticipated to pose a significant risk of hazardous materials exposure to schools.

Location of a Known Contaminated Site

The potential presence of contamination sites along the project transmission line ROW, near the existing substations, or the Weaverville Switchyard could result in a spread of the contamination. The mobilization of contamination during construction activities could impact uncontaminated soils, surface water, and/or groundwater in the area, as well as result in releases to the atmosphere. Such releases could pose risks to the environment, construction workers, and the public.

Because of the remote location and the absence of any known or identified contamination sites along the proposed transmission line ROW or at the proposed Weaverville Switchyard, it is unlikely that contamination is present along the transmission line ROW. Therefore, the potential impact associated with contamination concerns would be less than significant.

Mobilization of Contamination from Unknown Sites or Sources

During construction excavation activities for the project (e.g., ROW clearing, access road development, and pole footing excavation), unexpected soil and/or groundwater contamination could be encountered. As a result, contamination could be mobilized and affect uncontaminated soil, surface water, groundwater, and/or be released to the atmosphere. The possible mobilization of contamination could result in a potential significant impact to the environment, construction workers, and/or the public and require mitigation. However, implementing the EPMs would reduce the potential to mobilize contamination to less than significant, because implementation of the EPMs would minimize the risk of mobilization of the contamination.

Generation of Solid Wastes

During construction, nonhazardous solid wastes would be produced that would require disposal as described previously. This construction debris would be hauled and disposed of at appropriate handling facilities to be identified by the general contractor prior to the initiation of construction activities. Such waste generation and disposal would not pose a significant impact to public health and safety because it would be handled in accordance with Federal, State, and local regulations and because there is a low probability of unknown contamination existing in the project area.

Increased EMF Levels

High-voltage lines produce elevated EMF directly beneath and nearby the line. Average EMF levels directly beneath power lines vary depending on the voltage, height, and placement of the line. As indicated previously, EMF levels decrease rapidly with distance from the power lines. Furthermore, most locations using electrical equipment generate background EMF.

The projected magnetic field under the proposed 60-kV transmission line would be approximately 15 mG directly under the transmission line and about 5 mG at the ROW (or approximately 40 ft from the transmission line). This value is less than many household appliances' levels (see **table 3.8-2**). The transmission line ROW is through a mostly uninhabited area with no residential locations near the line. Therefore, any exposure to the public would be short term (nonresidential) and less than significant.

The electric fields from substation equipment and buswork are typically shielded by the surrounding equipment, supporting structures, substation fence, and other nearby objects. The dominant sources of electric fields near a substation are typically the overhead electrical transmission lines that enter and exit the substation. The proposed Weaverville Switchyard is not expected to increase electric field levels outside of the switchyard perimeters significantly. In addition, no residential buildings are located near enough to the proposed Weaverville Switchyard, where EMF would be of concern. Therefore, EMF levels from this switchyard would be less than significant, because they would not impact off-site locations.

Risk of Electric Shock within the Transmission Line ROW

Electric currents can be induced in conductive objects near transmission lines by electric and magnetic fields. The majority of concern is about the potential for small electric currents to be induced by electric fields in metallic objects close to transmission lines. Metallic roofs, vehicles, vineyard trellises, irrigation pipes, and fences are examples of objects that can develop a small electric charge in proximity to high-voltage transmission lines. Object characteristics, degree of grounding, and electric field strength affect the amount of induced charge. An electric current can flow when an object has an induced charge and a path to the ground is presented. The amount of current flow is determined by the impedance of the object to the ground and the voltage induced between the object and the ground. Induced currents can create the potential for nuisance shocks to people and the possibility of other effects, such as fuel ignition.

Electrostatic industry levels (where a person could not release an object) is approximately 9 mA for men and 6 mA for women. As indicated previously, the applicable NESC requirements limit induced currents on objects to 5 mA or less. Because the proposed transmission line is located in undeveloped areas and away from conducting objects, the potential for electric buildup would be considerably lower than the 5-mA limit. Therefore, electric shock potential would be less than significant, because it would be well below the 5-mA limit.

Long wire or metallic fences parallel to a transmission line can present an induced current situation, especially if the fence posts are nonmetallic and insulate wires from the ground. In such instances, the potential for shock can be reduced or eliminated through frequently grounding the fence using a ground rod connected to the fencing wire. During project construction, any metallic fences that parallel the transmission line for more than 500 ft and are located within 150 ft of the centerline of the proposed transmission line would be grounded, thereby reducing the potential for induced current electric shock associated with metallic fences to less-than-significant levels.

Interference with Pacemaker Operation

Electric and magnetic fields could create interference with certain cardiac pacemakers, causing them to switch from a normal full function pacing mode to an "asynchronous" fixed-pace mode. Some new pacemaker models can be more sensitive to external interference, while other models appear unaffected.

There are two general types of pacemakers: asynchronous and synchronous (IITRI 1979). The asynchronous pacemaker pulses at a predetermined rate. It is practically immune to interference because it has no sensing circuitry and is not exceptionally complex. The synchronous pacemaker, on the other hand, pulses only when its sensing circuitry determines that pacing is necessary. The concern is that interference could result from transmission line electric or magnetic fields and cause a spurious signal in the pacemaker's sensing circuitry (Sastre 1997). However, when these pacemakers detect a spurious signal, such as an induced 60-Hz current, they are programmed to revert to an asynchronous or fixed pacing mode of operation and return to synchronous operation within a specified time after the signal is no longer detected.

The potential for pacemaker interference due to high-voltage transmission line fields depends on the manufacturer, model, and implantation method, among other factors. Studies have determined thresholds for interference of the most sensitive units to be about 2,000 to 12,000 mG for magnetic fields and about 1.5 to 2.0 kV/m for electric fields (University of Rochester 1985). The electric and magnetic fields at the edge of and within the project transmission line ROW would be below these values. Further, the transmission line ROW mostly passes through a remote uninhabited area. Therefore, the potential impacts are determined to be less than significant.

3.8.2.4 Impacts from the No Action Alternative

Under the no action alternative, potential public health and safety and hazardous material impacts would not occur. However, without the project, the frequent electrical service outages that have occurred would continue to present potential public health and safety impacts.

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3.9 SOCIOECONOMICS AND ENVIRONMENTAL JUSTICE

Population, employment, income, housing, and community services were assessed for the potential impacts that would result from implementing the proposed action and alternatives.

A related element of socioeconomic impact is the potential impacts to minority and/or low-income populations. Executive Order 12898, “Federal Actions to Address Environmental Justice (EJ) in Minority Populations and Low-Income Populations,” provides that “each Federal agency shall make achieving EJ part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health and environmental effects of its programs, policies and activities on minority and low-income populations and Indian tribes.” The EO requires Federal agencies, as well as State agencies receiving Federal funds, to develop standards to address this issue. The CEQ has oversight of the Federal government’s compliance with EO 12898 and NEPA. The CEQ developed implementation guidance for EJ under NEPA, dated December 10, 1997. Therefore, in addition to the impacts related to population, employment, income, housing, and community services, this section of the EIS also identifies any disproportionately high and adverse impacts to minority or low-income populations in the project area.

3.9.1 Affected Environment

3.9.1.1 Resource Study Area

The study area for socioeconomics consists of Trinity County; the study area for EJ consists also of six census block groups in the vicinity of Lewiston and Weaverville. Both study areas could be affected both temporarily during construction and for the long term during operation of the proposed facilities.

3.9.1.2 Issues of Environmental Concern

Issues of environmental concern within the study area include the displacement of existing residents, disruption of existing businesses, reduction of property values, and effects on income and employment. If the project induces new growth, long-term population increases could result in increased demand for housing, schools, and other public services. The environmental impacts of these issues could occur temporarily during construction and for the long term during operation and maintenance. Potential socioeconomic benefits include those associated with a long-term increase in the reliability of the power supplies in the area and temporary increases in employment and income during construction.

EJ considerations focus on the potential for disproportionate impacts resulting from project construction and operation activities on minority populations, low-income communities, and tribes. Specifically, EJ issues include potential health and safety impacts, such as noise and dust emissions during construction and noise and EMF effects during operations. Other issues may include the potential project displacement of populations, the potential for adverse impacts on community institutions and organizations, reductions in access to public services, traditional and religious practices, forms of land use and community cultural character. Impacts related to these issues could occur temporarily during construction and for the long term after construction.

Participation in the project by Native American tribes and other potentially affected minorities and the effects of potential rate increases were issues identified during the public scoping process. While rate increases are not anticipated under the proposed action and alternatives, they potentially could occur as a result of the added cost of improving Western's transmission system and may adversely impact low-income and minority populations.

3.9.1.3 Characterization

The socioeconomic setting is characterized by population, employment, income, and housing data for Trinity County.

Population

Trinity County is composed of several small communities and has no incorporated cities. The majority of the county's population is concentrated in and around the communities of Weaverville, Hayfork, and Lewiston. These three communities are Census-Designated Places (CDPs). Smaller concentrations of people occur in Douglas City, Junction City, and Trinity Center, while the rest of the population is dispersed throughout the county.

Lewiston and Weaverville have experienced consistent and gradual growth over the last three decades. Between 1990 and 2000, Hayfork experienced a sharp decrease in population caused by the relocation of a lumber mill out of the Hayfork area, resulting in former mill employees and their families moving out of the area.

The county population as a whole decreased slightly between the 1990 and 2000 census. However, according to the California Department of Finance (DOF), between the years 2000 and 2003, the county's population increased by 297 persons, or 0.8% (**table 3.9-1**). This increase was possibly due to an increase of retired persons moving to the county and/or building vacation homes and persons nearing retirement moving from the cities (Trinity County 2003b).

The analysis of the impacts of the proposed transmission line on EJ issues follows guidelines described in *Environmental Justice Guidance under the National Environmental Policy Act* (CEQ 1997). The analysis has three parts: (1) a description of the geographic distribution of low-income and minority populations in the affected area; (2) an assessment of whether construction and operation would produce impacts that are high and adverse; and (3) if impacts are high and adverse, a determination as to whether these impacts disproportionately affect minority and low-income populations.

Table 3.9-1 Population Growth Trends (1970–2003) in Trinity County

Year	Population	Numerical Change	Average Annual Change (%)
1970	7,615	–2,091	–2.2
1980	11,858	4,243	5.6
1990	13,063	1,205	1.0
2000	13,022	–41	0.0
2003	13,319	297	0.8

Source: Trinity County (2003b).

Construction and operation of a transmission line could impact environmental justice if any adverse health and environmental impacts resulting from either phase of development were significantly high, and if these impacts disproportionately affected minority and low-income populations. If the analysis determines that health and environmental impacts would not be significant, there could be no disproportionate impacts on minority and low-income populations. If the impacts were significant, disproportionality would be determined by comparing the proximity of high and adverse impacts to the location of low-income and minority populations.

The analysis of EJ issues considers impacts in a 2-mi buffer, 1 mi on either side of the proposed route, to capture the effects of transmission line construction and operation. The study area includes six census block groups that are entirely or partially located in the buffer (**figure 3.9-1**).

The description of the geographic distribution of minority and low-income groups is based on demographic data from the 2000 Census (U.S. Census Bureau 2007b). The following definitions from U.S. Census Bureau (2007b) were used to define minority and low-income population groups:

- **Minority.** Persons are included in the minority category if they identify themselves as belonging to any of the following racial groups: (1) Hispanic or Latino, (2) Black (not of Hispanic or Latino origin) or African American, (3) American Indian or Alaska Native, (4) Asian, or (5) Native Hawaiian or Other Pacific Islander.

  Beginning with the 2000 Census, where appropriate, the census form allows individuals to designate multiple population group categories to reflect their ethnic or racial origins. In addition, persons who classify themselves as being of multiple racial origins may choose up to six racial groups as the basis of their racial origins. The term *minority* includes all persons, including those classifying themselves in multiple racial categories, except those who classify themselves as not of Hispanic or Latino origin and as White or "Other Race."

- **Low Income.** Individuals who fall below the poverty line are included in this category. The poverty line takes into account family size and age of individuals in the family. In 1999, for example, the poverty line for a family of five with three children below the age of 18 was $19,882. For any family below the poverty line, all family members are considered to be below the poverty line for the purposes of analysis.

The CEQ guidance proposed that low-income and minority populations should be identified where either (1) the low-income and minority population of the affected area exceeds 50%, or (2) the low-income and minority population percentage in the affected area is meaningfully greater than the low-income and minority population percentage in the general population or other appropriate unit of geographic analysis. In this EIS, both criteria were applied in using the Census Bureau data for census block groups; consideration was given to the low-income and minority population that is both more than 50% and 20 percentage points higher than it is in the county (the reference geographic unit).

Data in **table 3.9-2** show the minority and low-income composition of total population located in the buffer area (based on 2000 Census Bureau data and CEQ guidelines). Individuals identifying themselves as Hispanic or Latino are included in the table as a separate entry. However, because Hispanics or Latinos can be of any race, this number also includes individuals who identify themselves as being part of one or more of the population groups listed in the table.

Table 3.9-2 Minority and Low-Income Populations in the 2-Mile Buffer

Population	No. of Persons
Total population	5,805
White, non-Hispanic	5,116
Hispanic or Latino	286
Non-Hispanic or Latino minorities	403
One race	210
Black or African American	45
American Indian or Alaskan Native	130
Asian	25
Native Hawaiian or other Pacific Islander	6
Some other race	4
Two or more races	193
Total minority	689
Low-income	887
Study area percent minority	11.9
County percent minority	13.4
Study area percent low-income	15.3
County percent low-income	18.7

Source: U.S. Census Bureau (2007b).

Although there are minority and low-income individuals located in the study area potentially hosting transmission line development, the number of minority individuals in any of the six census block groups does not exceed 50% of the total population in each block group and does not exceed the county average minority population by 20 percentage points or more. Similarly, the number of low-income individuals in any the six census block groups does not exceed 50% of the total population in each block group or exceed the county average low-income population percentage by 20 percentage points or more. According to CEQ guidelines, therefore, there are no minority or low-income populations in the study area.

The two communities of Lewiston and Weaverville contain the majority of the population within the study area.

Employment and Income

Employment by Industry

Employment in Trinity County grew at an annual rate of 0.9% over the period 1995–2005. The two largest industries in the county are services with 832 persons employed (48% of the county total), and trade, with 366 persons employed (21% of the total) (**table 3.9-3**).

Tourism is increasingly becoming the main focus of employment for Trinity County, as it is in many other small rural counties located in the northwest forest areas of California. The timber industry has seen reduced harvest numbers in recent years as a result of increased regulations. Trinity County lost a major employment source when one of the two last operating lumber mills closed it doors and moved to the Central Valley in 1997 (Trinity County 2003b).

Future employment in the county is shifting toward the tourism and service industry; the hope is to recover from the losses to the timber industry. Services and attractions for visitors are being explored more thoroughly. One small winery has been bonded, and other wineries are being explored, increasing both agricultural and services employment. The county also offers many natural recreational features (e.g., rivers, lakes, wilderness areas) that generate service and retail-based businesses catering to recreational users. Where the timber industry was once the largest employer, tourism is replacing it in the economic lineup. As a result of various regulations designed to protect the environment, the overall production of the timber industry has been reduced (Trinity County 2003b).

Unemployment in the county ranged from 13.3% in 1998 to 10.8% in April 2005 (DOF 2005). The estimated median household income in 1999 was $ 27,711 (DOF 2005).

Housing

There were 7,908 housing units in Trinity County in 2000, of which 5,587 were occupied; they consisted of 3,981 owner-occupied units and 1,606 rental units. The vacancy rate for owner-occupied housing was 3.8%, while the rate for rental units was 8.5%, with a total of 2,393 total vacant units in the county.

Table 3.9-3 Employment in Trinity County by Industry in 2005

Industry	Employment	Percent of Total
Agriculture	80	4.6
Mining	10	0.6
Construction	122	7.1
Manufacturing	184	10.7
Transportation and utilities	10	0.6
Wholesale and retail trade	366	21.2
Finance, insurance, and real estate	160	9.3
Services	832	48.3
Other	60	3.5
Total	60	100.0

Source: U.S. Census Bureau (2007a).

There are seven hotel/motels located in the communities of Weaverville and Lewiston and eight others located elsewhere in Trinity County. In addition, there are 17 hotel/motels located in the City of Redding, in Shasta County, which is approximately 40 mi east of Lewiston.

Community Services

The Trinity County Sheriff's Department provides law enforcement services to the project area. Fire protection services within the project area are provided by the Lewiston Volunteer Fire Department, Weaverville Fire District, California Department of Forestry and Fire Protection, and USFS. Medical services are provided by Mountain Community Medical Services (formerly Trinity Hospital) in Weaverville.

Two primary schools district in Trinity County provide public schools: Lewiston School District and Weaverville Elementary School District.

3.9.2 Environmental Consequences

3.9.2.1 Standards of Significance

The proposed action and alternatives would have a significant and adverse effect on socioeconomic resources if they

- Induced growth or population concentrations;
- Caused a major and regionally significant reduction in employment or income;
- Displaced residents or physically divided the community in which they lived;
- Created a demand for additional housing that could not be sustained within the study area;
- Caused a substantial decrease in property values;
- Displaced businesses or caused a major disruption in companies as they carried out their business;
- Generated student enrollment that exceeded the capability of responsible authorities to accommodate it;
- Led to a major reduction in the revenues or expenditures of government agencies, or substantially adversely affected facilities providing public services; or
- Resulted in minority and low-income populations experiencing a disproportionate share of the adverse effects generated by the proposed project.

3.9.2.2 Environmental Protection Measures

EPMs for socioeconomic issues listed in **table 2-2** include the following standard practices applicable to temporary and long-term use of lands not owned by Western:

- Any land temporarily required for construction of the proposed facilities (such as conductor pulling sites and material and equipment storage areas) would be arranged through temporary-use permits or by specific arrangements between the construction contractor and affected landowners. Similar arrangements would be made with business owners to avoid or minimize disruptions in their business (posting detours and limiting the area and time of disruption, obtaining temporary-use permits, making specific arrangements between the construction contractor and affected landowners, or purchasing at fair market value).

- With the exception of Federal lands, if a new ROW was needed, Western would acquire land rights (easements) in accordance with applicable provisions of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646), as amended. Easements would be purchased through negotiations with landowners at fair market value and based on independent appraisals. The landowner would normally retain title to the land and could continue to use the property in ways that would be compatible with the transmission line.

EPMs described above and those in the air quality, cultural resources, noise and health and safety impact assessments would also help minimize and avoid adverse impacts to residents, including minority and low-income populations (see sections 3.1, 3.3, 3.6, and 3.8). These EPMs include consultation with potentially affected Native Americans. On this project, and as further described in section 3.3, Western consulted with the California Native American Heritage Commission (NAHC) and two federally recognized tribes: the Redding Rancheria and the Hoopa Valley Indian Reservation. Contact was also made with groups and persons who do not have Federal recognition status. These include the Nor-Rel-Muk Nation, the Wintu Educational and Cultural Council, and Ms. Carol Y. Bowen. Consultation helps avoid and minimize adverse impacts to Native Americans by better defining their concerns, locations of traditional cultural properties (TCPs), and cultural practices that could be affected by the proposed action and alternatives.

3.9.2.3 Impacts from Proposed Action

The proposed action consists of three activities. The first is clearing the ROW, the second is constructing the transmission line, and the third is constructing the switchyard. **Table 3.9-4** lists the activities along with the estimates of the number of workers required, the type of worker needed, the number who would come from outside the area, and the length of time that activity would occur.

Once the project was constructed, the operations and normal maintenance activities for the transmission lines and switchyard would be carried out by the existing Western and Trinity PUD staffs.

Table 3.9-4 Project Employment by Number, Type, Location, and Time Period

Activity	Number of Workers/Employment Type	Number of Outside Workers	Time Period
ROW clearing	6 to 10 loggers 4 to 6 truckers 1 to 2 helicopter pilots	2 (helicopter pilots only)	10 to 12 weeks
Transmission line construction	5 linemen 5 equipment operators 5 groundmen	7 or 8	6 to 8 months
Switchyard construction	2 linemen 4 equipment operators 2 electricians 4 groundmen	6	10 to 12 months

Population

The proposed action would result in a small, short-term increase in population of up to 16 workers in Trinity County as a result of the employment of contract construction workers from outside the county. The increase of 16 workers represents an insignificant increase in the local workforce. Given the short length of time that the proposed clearing and construction activities are to take place and the small number of outside workers that would be needed, the proposed action would not measurably increase the population of Trinity County.

Employment and Income

The small number of outside workers would not cause a major or regionally measurable change in employment.

Minor, short-term positive effects to the economy of the project area might occur as a result of an increased consumer base caused by the employment of contract construction works from outside the county. Expenditures during project-related construction activities for equipment, energy, fuel, operating supplies, lodging and meals and other consumer goods for workers, products, and services would benefit local businesses and result in short-term positive economic impacts in Trinity County.

Indirect, long-term beneficial economic effects would occur from the proposed action providing a reliable source of power for the area. The increased reliability of the energy supply to commercial and industrial users could contribute indirectly to economic growth and additional tax revenues in Trinity County, but the increased reliability of supply would not, in and of itself, induce growth.

The proposed action would cross undeveloped land and would not displace any businesses or cause a major disruption in business.

Housing

Most of the temporary workers needed to construct the project are expected to be housed in local motels or hotels. The demand from approximately 16 workers for additional temporary housing in Trinity County is not anticipated to be significant. No significant effects to housing availability and services are expected from the proposed action.

While the transmission line would cross some land of small property owners, these owners were contacted and agreements were made as to the project's use of their lands that would not result in impacts to housing. The remaining portions of the project would cross lands held by Federal agencies or a commercial timber company. These parcels do not contain housing; therefore, the proposed action would not create a disruption to housing nor cause any change in property values.

Community Services

The workforce required to construct the project would be drawn from the local communities, with some additional contract workers coming from outside the area. The number of workers coming from outside the area would be very small.

The proposed action would result in improved power reliability that would have only minor direct or indirect effects to community services in the project area (i.e., the reduction in power outages would reduce the use of emergency power by police, fire, or medial facilities). Construction, operation, and maintenance of the project should not increase or decrease the need for police, fire, medical, or other community resources in the project area. Therefore, the proposed action would not lead to a reduction in revenues or increased expenditures by government agencies.

It is not likely that impacts from the proposed action would produce high and adverse health and safety impacts on the general population — specifically, noise and dust emissions during construction, and noise and EMF during operations. In addition, because there would be no new residents in the area during either phase of the project, there would be no adverse impacts on housing, education, and other community services. It is unlikely that the project would impact access to resources that might be used for subsistence agriculture and recreation by low-income and minority populations or access to sites that might be of cultural or religious significance to tribes. It is also unlikely that there would be the potential for impacts on the value of local property owned by low-income or minority individuals.

Because there were no minority or low-income populations identified in the study area based on CEQ criteria (see section 3.9.1.3), any high and adverse impacts that might occur from either phase of the project would not disproportionately impact low-income or minorities in the area.

3.9.2.4 Impacts from the No Action Alternative

The 6 mi of existing distribution lines and ROW have been established in the Lewiston and Weaverville areas for more than 25 years. The no action alternative would not develop Segments 2 and 3 and would continue to use the existing transmission lines. It would result in no additional direct, indirect, or cumulative effects to the population, housing, income, or community services of the project area. However, the current issues regarding system reliability would remain.

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3.10 TRAFFIC AND TRANSPORTATION

3.10.1 Affected Environment

This section presents a baseline assessment of current traffic and transportation systems that could be affected by construction, maintenance, and/or operation of the project. Roadways in or near the transmission line ROW and the proposed Weaverville Switchyard are identified, and general information on current traffic on these roadways and other transportation facilities within the project area is provided.

3.10.1.1 Resource Study Area

Transportation systems cover a variety of modes of movement. Although roadways and highways are the main transportation systems favored in the United States, other transportation systems must be addressed in an EIS, when appropriate. Other transportation systems that might have to be addressed include airlines, railways, public and private bus systems, walkways, and/or bike paths if they could potentially be affected by a project.

The proposed action would be located in a rural area with few transportation systems other than roads. Railroad service is not provided in Trinity County. The closest railroad lines are in Shasta County to the east and Humboldt County to the west. Walkways are generally limited to cities or local communities away from the project site. Trinity County is in the process of developing an extensive bikeway master plan for the region. This bikeway plan identifies major bikeway lanes and paths for the Hayfork, Junction City, Douglas City, Lewiston, and Weaverville areas. Public bus transportation is not provided within Trinity County.

The transportation systems that could possibly be affected by implementing the proposed action are roadways and local airports. In addition, many rural dirt roads are used by OHVs during the summer season for recreational activities.

Highways and Roadways

The term “level of service” (LOS) is used to classify the operational conditions of roadway traffic streams and intersections. Along roadways, the LOS will vary, because roadway traffic flow depends on a number of factors, such as the number of lanes, divided versus undivided roadways, and controlled roadways versus freeways.

The *Highway Capacity Manual 2000* (HCM) (TRB 2000) defines six LOSs for various roadway types. These six levels are given letter designations ranging from “A” to “F,” with A representing the best operating conditions and F the worst. The general definitions of LOS for uninterrupted flow (flow unrestrained by the existence of traffic control devices) are shown in **table 3.10-1.**

As noted in the table, the LOS is used to determine the degree of congestion associated with vehicular traffic on roads. A rating of LOS A is used to refer to no congestion conditions, whereas a rating of LOS F signifies heavy congestion, such as stop-and-go vehicle movement. Normally, LOS D is used to represent the minimum acceptable level of congestion for a given

Table 3.10-1 Definitions of Different Levels of Service

LOS	Definition	Normal Range (Volume to Capacity Ratio)
A	Represents free flow. Individual users are virtually unaffected by the presence of others in the traffic stream.	0.00 to 0.60
B	In the range of stable flow, but the presence of other users in the traffic stream begins to be noticeable. Freedom to select desired speeds is relatively unaffected, but there is a slight decline in the freedom to maneuver.	0.61 to 0.70
C	In the range of stable flow, but marks the beginning of the range of flow in which the operation of individual users becomes significantly affected by interactions with others in the traffic stream.	0.71 to 0.80
D	Represents high-density but stable flow. Speed and freedom to maneuver are severely restricted, and the driver experiences a generally poor level of comfort and convenience.	0.81 to 0.90
E	Represents operating conditions at or near the capacity level. All speeds are reduced to a low but relatively uniform value. Small increases in flow will cause breakdowns in traffic movement.	0.91 to 1.00
F	Used to define forced or breakdown flow. This condition exists wherever the amount of traffic approaching a point exceeds the amount that can traverse the point. Queues form behind such locations.	Not meaningful

Source: TRB (2000).

road by the California Department of Transportation (Caltrans) and local transportation departments.

In most cases, LOS traffic flows focus on peak maximum-roadway-use periods, which generally occur in the morning (7 a.m. to 9 a.m.) and afternoon (4 p.m. to 6 p.m.) when workers commute to and from work locations. The morning period is referred to as “Peak AM,” and afternoon is identified as “Peak PM.”

The LOS system of defining traffic is also used for establishing traffic conditions at intersections by the HCM. Intersections are also based on letter designations “A” through “F.” The LOS designations typically depend on the quality of traffic flow at the intersections along a roadway. The HCM methodology expresses the LOS at an intersection in terms of delay time or wait period for the various intersection approaches.

The HCM uses different procedures depending on the type of intersection control. Generally, two types of intersection control methods are used for evaluating and analyzing the intersection LOS. “Signalized intersections” have traffic light control systems. “Unsignalized intersections” are stop-sign controlled. These stop-sign-controlled intersections can be further broken down into two-way stop control (TWSC) and all-way stop control (AWSC) situations.

Table 3.10-2 shows the six LOSs and their corresponding range of average control delay for both signalized and unsignalized intersections. This table also provides brief traffic flow conditions for the intersection as well as a general description at the intersection for each of the LOS values.

Table 3.10-2 Intersection Level of Service (LOS) Description

LOS	Conditions	Signalized Intersections Description	Intersection Delay in Seconds per Vehicle Signalized	Intersection Delay in Seconds per Vehicle Unsignalized[a]
A	Free flow	Users experience very low delay. Progression is favorable, and most vehicles do not stop at all.	≤ 10.0	≤ 10.0
B	Stable operations	Vehicles travel with good progression. Some vehicles stop, causing slight delays.	>10.0 to 20.0	>10.0 to 15.0
C	Stable operations	Higher delays result from fair progression. A significant number of vehicles stop, although many continue to pass through the intersection without stopping.	>20.0 to 35.0	>15.0 to 25.0
D	Approaching unstable	Congestion is noticeable. Progression is unfavorable, with more vehicles stopping rather than passing through the intersection.	>35.0 to 55.0	>25.0 to 35.0
E	Unstable operations	Traffic volumes are at capacity. Users experience poor progression and long delays.	>55.0 to 80.0	>35.0 to 50.0
F	Forced flow	Intersection's capacity is oversaturated, causing poor progression and unusually long delays.	>80.0	.50.0

[a] Unsignalized intersection includes TWSC and AWSC.

Source: TRB (2000).

SR 3 is a north-south route that passes west of the proposed Weaverville Switchyard. This highway passes through Weaverville and connects Trinity County to Siskiyou County in the north and to other southern counties.

SR 299 is a west-east roadway located south of the proposed transmission line ROW from the community of Lewiston to Weaverville. SR 299 is the major route used by tourists to the Whiskeytown-Shasta-Trinity NRA and other recreational facilities in Trinity County. This route is the main access roadway from the City of Redding and Interstate 5 (Shasta County) to the east and from Humboldt County to the west. The roadway is also the main truck route for this region and is used to transport timber and other bulk shipments (e.g., groceries, hardware, appliances, and building supplies). This highway would be used as the major access and supply point to sections of the proposed transmission line ROW and Weaverville Switchyard.

SR 3 and SR 299 temporarily merge from near Douglas City to Weaverville. At Weaverville, SR 3 continues north, and SR 299 proceeds west.

Generally, roadways and intersections within Trinity County are operated at LOS A or B because of the general sparse population in the region. However, the LOS may fall below these LOS values during major holidays (e.g., Memorial Day, Fourth of July, and Labor Day) and other peak summer weekend periods, when tourist traffic to recreational facilities in the area is highest.

General transportation features within the project area are indicated on **figure 3.10-1**. The State highways near the project are SR 3 and SR 299. Both of these are major access roads used by local residents and tourists to gain access to the western and central portion of Trinity County. However, none of these State highways cross the proposed transmission line ROW. Most of the roads providing access to the proposed transmission line ROW are existing compacted dirt or gravel access roads, although a few asphalt paved roads is located near the communities of Lewiston and Weaverville.

Airports

There are five airports in Trinity County: Lonnie Pool Field/Weaverville Airport, Trinity Center Airport, Hayfork Airport, Hyampom Airport, and Ruth Airport. None of these airports support major airline service or scheduled airline service to other locations. A number of other private and public airports are located in adjacent counties.

3.10.1.2 Issues of Environmental Concern

The main issue of concern would be traffic increases on local roadways as a result of construction, transportation, and/or maintenance of the project. Of particular concern would be changes in the LOS as a result of implementing the project. As indicated above, most counties in California, including Trinity County, strive to meet LOS D on urban roadways and LOS C on all other roadways. However, Caltrans attempts to maintain a target LOS at the transition between LOS C and D on State highway facilities. Caltrans acknowledges that this may not always be feasible and recommends that the "lead agency" (e.g., Trinity County) consult with Caltrans to determine the appropriate target LOS. If an existing State highway facility is operating at less than the appropriate target LOS, corrective measures should be taken.

Another area of concern would be possible increases in traffic at local airports associated with helicopter traffic. The project plan is to use helicopters to remove timber logs that were cut to expand the existing ROW and construct the new ROW. Helicopters would also be used to supply goods, materials, and personnel to remote areas inaccessible to vehicles.

3.10.1.3 Characterization

Highways

As indicated previously, the only State roadways in the area are SR 3 and SR 299. Both are two-lane asphalt roadways. Sections of SR 299 have passing lanes; however, few passing lanes are provided along SR 3. Generally, SR 299 has wide asphalt shoulders, but SR 3 shoulders are limited. The speed limit on these highways is generally 55 mph, except around sharp curves, where posted speeds are at or below 35 mph. Traffic volumes on these roadways near the project area are listed in **table 3.10-3**.

A noted in **table 3.10-3**, all of the State roadways near the project operate at LOS B or better. In addition, these traffic levels indicate that all intersections near the project are well within Trinity County and Caltrans LOS guidelines. The Trinity County 2005 regional transportation plan

Table 3.10-3 Traffic Volumes for SR 3 and SR 299

Roadway Segment	Classification	No. of Lanes	Average Daily Volume[a]	Hourly LOS D Threshold[b]	Hourly Design Capacity[c]	Peak-Hour Volume[d]	Peak-Hour LOS
SR 3							
Douglas City	Major arterial	2	1,500	970	1,200	160	A
Weaverville		2	4,350	970	1,200	490	A
County Dump Road		2	3,800	970	1,200	340	A
Rush Creek Road		2	2,100	970	1,200	210	A
SR 299							
Weaverville Limits	Major arterial	2	4,650	970	1,200	490	A
East Junction SR 3		2	4,750	970	1,200	690	B
Lewiston Road		2	3,500	970	1,200	400	A
Lewiston Rd/Trinity Dam Blvd.		2	4,000	970	1,200	510	A
Trinity/Shasta County Line		2	4,000	970	1,200	510	A

[a] Estimated number of average vehicles per day in one direction, based on Caltrans data.
[b] Maximum number of vehicles per hour in one direction for LOS D rating.
[c] Maximum number of vehicles per hour in one direction.
[d] Peak-hour number of vehicles per hour in one direction, based on Caltrans data.

Source: Caltrans (2005).

expressed concern regarding the traffic conditions and the deteriorating LOS along SR 3 and SR 299 in the downtown area of Weaverville due to the limited number of alternative routes and increasing traffic conditions in the city.

Currently, the LOS at intersections in Weaverville is mostly between B and C. However, Washington Street is currently operating at LOS F, and Garden Gulch/Forest Avenue is rated at LOS E during peak-hour conditions in the summer. According to the Trinity County 2005 regional transportation plan, traffic conditions in this area will continue to deteriorate between 2004 and 2030 when traffic is projected to increase by 28% if no new roadways or intersection improvements are made.

The State roadways are used by trucks to bring goods and services into, through, or out of the region. These roadways are also used by logging trucks to transport timber to local mills.

A breakdown of truck traffic using SR 3 and SR 299 is provided in **table 3.10-4**. As noted in this table, most of the trucks along these two State roadways are semi-trucks, which represent a little less than 50% of most of the truck traffic on SR 3 and more than 60% on SR 299.

The main roadways near the eastern portion of the project that could provide access to construction and maintenance of the transmission line ROW are Deadwood Road, Trinity Dam Boulevard, Fish Hatchery Road, Lookout Ridge Road, and Jessup Gulch Road. A general discussion of these roads follows.

Table 3.10-4 Average Daily Truck Traffic on SR 3 and SR 299

Road Segment	AADT Trucks[a]	Percent of Truck Traffic	Truck by Number of Axles				
			2	3	5	5+	Percent
SR 3							
Hayfork	114	5.54	27	18	8	60	53
Junction at SR 299							
Northbound	141	9.43	30	43	5	63	45
Southbound	152	3.5	53	38	23	37	24
County Dump Road							
Northbound	235	7.35	23	75	20	118	50
Southbound	168	5.79	13	61	12	82	49
Brush Creek Road							
Northbound	113	8.39	6	46	7	53	47
Southbound	65	10.86	3	29	4	28	43
SR 299							
Weaverville limits							
Westbound	429	12.62	26	73	26	304	71
Eastbound	413	11.47	25	70	25	292	71
Junction at SR 3							
Westbound	327	6.88	56	56	9	206	63
Eastbound	431	10.91	74	74	12	272	63
Lewiston Road							
Westbound	476	14.88	47	93	23	313	66
Eastbound	497	12.43	29	85	31	351	71

[a] AADT = annual average daily traffic.

Source: Caltrans (2005).

- *Deadwood Road.* Deadwood Road is a very narrow two-lane road that is asphalt-paved for approximately 1 mi near the community of Lewiston. This road also is located on the eastern side of the Trinity River and parallels Trinity Dam Road. After a mile, the road is compacted earth and gravel with several very narrow locations and no assigned speed limit. This road provides east-west access between the communities of French Gulch and Lewiston. The eastern portion of the road could be used as an access point to the southeastern sections of the proposed transmission line ROW near Lewiston Lake via Jessup Gulch Road.

- *Trinity Dam Boulevard.* Trinity Dam Boulevard is the main county roadway (CR 105) in the eastern portion of the project area. This roadway is two-lane asphalt. Trinity Dam Boulevard extends from SR 299 through the community of Lewiston and along the western side of Lewiston and Trinity Lakes and connects to SR 3, northeast of Weaverville. Most of this road is posted at 35 mph near recreational areas and curves. This road would provide general access to the eastern and central portions of the proposed transmission line.

- *Fish Hatchery Road.* Fish Hatchery Road is paved and provides access to the Trinity River Fish Hatchery just south of Lewiston Dam. This road is used by tourists visiting the hatchery and by employees. This road would provide access to the transmission line locations near the hatchery.

- *Lookout Ridge Road.* Lookout Ridge Road is compacted earth and gravel, with no posted speed limit. Access to this road would be from CR 106 via County Line Road or Highland Ridge Road. This road would be used to provide general access to the northwestern portion of the transmission line located along the eastern side of Lewiston Lake.

- *Jessup Gulch Road.* Jessup Gulch Road is compacted earth and gravel, with no speed limits. Access to Jessup Gulch Road would be from Deadwood Road. This road could provide access to the southeastern portion of the transmission line.

Another road that could be used to provide access to the east-central portion of the transmission line and for the section of line from the fish hatchery to Lewiston Substation is Rush Creek Road. Rush Creek Road extends from the community of Lewiston and generally follows Rush Creek for approximately 8 mi before connecting to SR 3 near Rush Creek Vista. Most of this road is posted at 35 mph.

Access to the central and western portion of the project is limited due to the Trinity River, which blocks most southern approaches to the transmission line ROW from SR 299. The main roadway in this area is Browns Mountain Road. Except for asphalt sections along the eastern and western portions of the roadway, Browns Mountain Road is compacted earth and gravel with no posted speed limit. Access to the eastern portion of Browns Mountain Road is from SR3/SR 299 via Little Browns Creek Road, and the eastern access is provided from SR 299 via Lewiston Road. Access to the proposed Weaverville Switchyard would be directly from SR 3/SR 299.

Other roadways in the project area that could possibly be used to provide limited access to the proposed transmission line ROW include Power House Road, Papoose Road, Whiskeytown-Trinity-Shasta NRA Road, Eastman Gulch Road, Vanicia Mine Road, Jennings Gulch Road, CR 320, Blue Rock Road, and Union Ridge Road. Almost all of these roads are compacted dirt and gravel, with no posted speed limit. Furthermore, most of these roads are not maintained over the winter months. In many cases, OHVs or four-wheel-drive vehicles are required along sections of these roadways, especially during poor weather.

Other backcountry roadways are located near the proposed transmission line routing, but they are unnamed and seldom used. In addition, many of these remote roads are accessible only by four-wheel drive or OHVs and are used for logging or for providing access for fire equipment. These roadways are dirt and, in most cases, are unimproved and seldom maintained. During winter months, these roads are impassible due to snowfall.

Several access roads would be constructed along the proposed transmission line corridor, mostly as short spurs. Almost all of these roads would be minimally graded dirt and used to provide limited access to the transmission line or specific pole locations. The locations of access roads and proposed new access roads are provided in Chapter 2, Project Description, in **figure 2-2**.

The STNF completed a Forest-level Roads analysis in 2002. The analysis evaluated maintenance level three and four roads, including roads in the vicinity of the proposed action. The existing access roads have a lower maintenance level and were not included in the analysis. The STNF is currently conducting a Travel Management and Route Designation Process, and the road inventory is available for review. Route designations are planned for 2009. The existing access roads are inventoried as a mix of NFS and unclassified roads.

The busiest period for use of roadways in the project area would be between Memorial Day and Labor Day, when recreational activities in the area peak. Peak traffic conditions on these roadways would occur during the Memorial Day, Fourth of July, and Labor Day weekends. Traffic would diminish in the area during the fall through spring as a result of snowfall, poor weather conditions, and a decrease in tourist travel.

Off-Highway Vehicles (OHVs)

Many portions of the project transmission line routes would be located in areas with very limited or no development. These areas attract many recreational visitors, especially on weekends. Many visitors use the area for off-road recreation activities.

The most active OHVs used within many areas of the project area would be dirt bike motorcycles and four-wheel vehicles. Many of the motorcycles travel in small groups (e.g., two to four people). Most of the OHV activities would be along isolated dirt or unimproved roads or trails on both Federal and private lands.

Airports

There are five airports in Trinity County. However, only Lonnie Pool Field/Weaverville Airport and Trinity Center are near the project site. Lonnie Pool Field/Weaverville Airport is located west of the proposed transmission line ROW and Weaverville Switchyard, and Trinity Center is located north of the existing Trinity Dam Substation. Below are brief descriptions of these airports:

- *Lonnie Pool Field/Weaverville Airport.* This is a public airport having one asphalt-paved runway (Runway 18/36) 2,980-ft long and 50-ft wide. Approximately 15 single-engine private aircraft are based at this airport. The average number of flights per day from the airport is 38.

- *Trinity Center*. This airport is open to the public. The airport has an asphalt-paved runway (Runway 14/32) that is 3,215-ft long and 50-ft wide. Approximately 30 single-engine and one multiengine aircraft operate from this airport. The average number of flights per day from the airport is 47 (Air Nav 2006).

The Trinity County 2005 regional transportation plan (Trinity County 2005b) indicated the Lonnie Pool Field/Weaverville Airport has significant operational deficiencies that are not consistent with the FAA standards and policies. Deficiencies noted in this plan for the airport include these:

- Airspace obstructions prohibit two-way operation.

- The airport is closed to night operations.

- Short and steep runway has frequent tail-winds and cross-winds.

- There is no support area for hangers, tie-downs, fixed base operations, and adjoining or commercial development.

- Approach, departure, and overflight routes are located over populated areas, resulting in noise and potential safety hazards.

Because of the Lonnie Pool Field/Weaverville Airport shortcomings, Trinity County is in the process of revising its airport master plan to abandon and relocate this airport. Twelve alternative locations and the existing airport sites in the county were originally evaluated, but only three sites were determined to meet the county requirements. As described in Chapter 2, Proposed Action and Alternatives, the project was relocated to avoid the county's favored location east of Weaverville.

3.10.2 Environmental Consequences

The section includes an analysis of potential traffic and transportation impacts associated with the construction, operation, and maintenance of the proposed transmission line and new Weaverville Switchyard. The section also contains recommended mitigation measures to reduce potential adverse impacts, if required.

3.10.2.1 Standards of Significance

Potential traffic and transportation impacts were assessed by considering existing roadway and traffic conditions, potential project-related vehicle use, and roadway intrusion to determine potential disruption of traffic and transportation patterns. This analysis also included examining helicopter flight operation during construction, because helicopters would be required for removing timber logs and for various activities associated with transmission line construction.

Construction activities represent the principal means by which local transportation systems in Trinity County could be affected. However, construction traffic would be short term and not represent a permanent condition to local and regional traffic and transportation systems. Construction of the project is projected to last 2 years and would occur from April through October each year, depending on local weather conditions. Construction traffic would shift along the transmission line corridor as sections of line were completed, so impacts at any given location would be of short duration within the planned construction period.

Transportation activities after constructing the proposed transmission line and Weaverville Switchyard would be limited to routine operations, inspection, and maintenance activities. These post-construction activities would be sporadic and would represent minor daily traffic consisting of a few trips per day.

To determine if an action might cause a significant impact, both the context of the project and the intensity of the impact on local or regional transportation systems must be considered. The context considers the impacts of the project on traffic and transportation systems in and near the project. The intensity of transportation impacts would primarily consider any unique characteristics of the regional transportation system, such as high-traffic-use roads (e.g., LOS of C or worse), roadway conditions (e.g., two-lane divided or undivided highways, winding or straight roadways, turnout passing lanes, or other local road situations), and types of vehicles (e.g., automobiles versus large trucks).

Impacts resulting from the project-related transportation activities would be considered significant if the following occurred:

- Project vehicle trips on area roadways associated with construction activities would reduce existing LOS to levels of D or lower, or cause undo delays along primary roadways within the project area;
- Project construction activities within or adjacent to public roadways would cause traffic delays of greater than 15 minutes;
- Project vehicle trips or construction activities within or adjacent to roadway ROWs would increase the risk of motor vehicle accidents or pedestrian injury;
- Project construction activities would result in delays in emergency vehicle response times or require emergency vehicles to use alternate routes during emergency situations; or

- Construction activities would result in unrepaired damage to the existing roadway infrastructure.

3.10.2.2 Environmental Protection Measures

Traffic controls would be implemented at locations of ingress and egress of construction vehicles on public roadways as necessary to ensure that safe driving conditions were maintained throughout the project area. These traffic controls could include, but would not be limited to, ensuring that the locations of newly constructed access road intersections or intersections along public roadways were highly visible. The general contractor in charge of construction activities would place signage and/or provide traffic control crews at select locations as necessary to ensure that motorists were aware of the presence of crossing or slow-moving construction vehicles.

To mitigate this potential safety concern associated with logging trucks, Western would have to assure the contracted logging company establishes ingress and egress traffic controls along public roadways as necessary to ensure that safe driving conditions are maintained at all potential risk locations and along regional roadways. Helicopter offloading of logs would be away from local roadways, so they would not impact traffic along local dirt access roads. However, loading of logging trucks could result in periodic blockage of some dirt access roads, but warning signage and other safety practices used by the logging industry would be employed to minimize traffic hazards for these operations. The blockage of these roads would be temporary and would not result in significant impacts.

Following construction, or during construction as necessary to maintain safe driving conditions, any damage to existing roadways caused by construction vehicles would be repaired in accordance with specifications established by Federal, Trinity County, Caltrans, or private landowners.

Western would prepare a Transportation Plan prior to use of NFS roads. The Transportation Plan would identify the maintenance level and maintenance actions required for all roads necessary for project access. Permanent access roads would become part of the National Forest Transportation System. Western would be responsible for all or a proportional share of maintenance for all roads needed to access the project on NFS lands. In addition, Western would reimburse the USFS according to its fee schedule for roadway maintenance associated with logging use. However, if Western restored the roadways to preconstruction or better conditions in accordance with an agreement with the USFS, fees would be waived.

3.10.2.3 Impacts from the Proposed Action

This section identifies the potentially significant adverse impacts and required mitigation measures for the proposed action, if required. This section analyzes the short-term impacts associated with constructing the transmission line and Weaverville Switchyard. These potential short-term impacts would be related to the movement of personnel and equipment during construction of the transmission line and the proposed Weaverville Switchyard as well as logging activities.

Long-term traffic impacts would be associated with operation and maintenance of the project. These long-term-impacts would be a very limited number of vehicle trips during routine operation, inspection, and maintenance activities for both the transmission line and substation. Generally, operation, inspection, and maintenance traffic would occur infrequently and would involve one or two vehicles and two to four workers per year.

The specific impacts and mitigation measures discussed below have been identified for the project. The specific roadways used and the number of construction vehicle trips might vary slightly for the project, but the impacts and mitigation measures identified below account for these variations.

Issues concerning erosion impacts and controls associated with new access roads, improvements of existing roads, and ROW clearing for the project are discussed in Section 3.12, Water Resources, because they deal with water runoff issues and are not specifically traffic related. Erosion control associated with project construction and operation would be specified in the project-specific operation and maintenance plan, and the use of BMPs would be included in the construction SWPP plan. Furthermore, erosion control would also be specified in various agreements with the USFS, BLM, and/or Reclamation.

Increased Traffic Volumes on Area Roadways

Construction of the project facilities would cause increased traffic levels on roadways used to transport equipment, materials, and personnel to various construction locations and to remove logs to local lumber mills. Peak-level construction traffic could increase the number of vehicle trips per day on roadways used for personnel access and the delivery of equipment and materials to work sites. Trips associated with vehicles used for deliveries, logging, and other projects would occur throughout the day rather than only during peak-hour periods. The projected peak-hour trips during the morning and afternoon periods would mostly be associated with construction workers arriving at or leaving job sites. It is projected that the number of these workers would range from 15 to 25 per day. This number would result in an estimated increase in morning and evening peak-hour traffic of approximately 13 to 21 vehicles on regional roads, assuming a vehicle occupancy rate of 1.2. Construction operations could occur during holidays and weekends; however, these work periods could be reduced if required to minimize traffic impacts.

Most of the construction vehicles and trucks would be traveling to and from project work sites along SR 299, Trinity Dam Road, and Rush Creek Road during construction of the eastern portion of the project and along SR 299 and the combined section of SR 3/SR 299 from Douglas City to Weaverville during construction of the western portion of the transmission line and Weaverville Switchyard. From these roadways, construction traffic would travel on various local access roads to the job site. However, some of the construction equipment would remain on the construction site overnight or remain at the site for extended periods and would not travel off-site very often. As shown in **table 3.10-3**, LOS ratings for State highways are within A and B conditions. Vehicle trips associated with construction activities for the project would not reduce the current LOS below the current ratings. Therefore, construction-vehicle-related impacts would be less than significant along local roadways.

Construction vehicles would not generally pass through Weaverville, a congested area with some roadway segments and intersections at or exceeding LOS D conditions. These elevated LOS levels occur mostly during the summer months when tourist traffic is highest in the region. However, some construction workers could be temporarily housed in or near Weaverville. Some delivery and other construction vehicles would pass though Weaverville. Construction workers and truck traffic through Weaverville would be very limited, would mostly occur throughout the day, and would not result in significant delays along roadway segments or at intersection. Therefore, these traffic increases would not represent a significant impact in existing LOS levels or traffic within Weaverville.

Logging trucks would primarily transport logs to local mills. Logging truck traffic would increase existing truck traffic along SR 299. However, most of the logging trips would not occur during peak-hour periods but would instead be dispersed throughout the day. These logging trips, when added to the normal construction traffic, would not impact traffic conditions on SR 299 or other roadways in the project area. In addition, logging truck entrances to major highways in the area would use normal safety procedures established by governmental agencies. These safety procedures would include placing signage and/or providing traffic control crews at select locations to ensure that motorists were aware of the presence of logging truck crossings.

As indicated above, construction personnel, material delivery, and logging vehicles would likely access work sites primarily from SR 299 and other less-traveled paved roadways such as SR 3, Trinity Dam Boulevard, and Rush Creek Road. Except for the combined section of SR 3/SR 299, construction traffic using SR 3 south of Douglas City and northeast of Weaverville would be very limited. Most of the project-related vehicles along the combined section of SR 3/SR 299 would be for the construction of the proposed Weaverville Switchyard or for access to Browns Mountain Road for construction activities along the western portion of the proposed transmission line. Construction vehicles would use Trinity Dam Boulevard to gain access to (1) transmission construction sites near or along Lewiston Lake, (2) the Trinity Fish Hatchery transmission leg to Lewiston substations, and (3) transmission sites along the eastern portion of the transmission line. Vehicles would use Rush Creek Road for construction of portions of the eastern portion of the transmission line and the segment of line that would run from the fish hatchery to the Lewiston Substation.

Construction vehicles could also use a number of rural roads in Trinity County. Some of these possible rural access roadways include Power House Road, Papoose Road, Whiskeytown-Trinity-Shasta NRA Road, Lookout Ridge Road, Eastman Gulch Road, Vanicia Mine Road, Jennings Gulch Road, Jessup Gulch Road, Fish Hatchery Road, Rush Creek Road, 320 Country Road, Blue Rock Road, Union Ridge Road, Browns Mountain Road, Brown Mountain Road, and Little Browns Creek, as well as other unnamed and seldom-used regional roadways. Most of these roadways are constructed of compacted earth or gravel. Because of their low level of use, impacts to transportation on these routes would be negligible.

Approximately 4.4 mi of new access roads would be constructed to gain entrance to various sections of the transmission line ROW or to specific transmission line pole locations. Most of these new roads would be short spurs of compacted dirt from existing access roads or rural roadways. The location of new access roads, improvements to existing access roads, and other access points to the project are provided in Chapter 2, Project Description, **figure 2-2**.

Because of the current very low traffic volumes on local roadways and the low number of construction-related trips each day along most of these roadways, construction traffic would not change the existing LOS or result in significant traffic delays along these rural access routes. Therefore, the construction traffic along the rural roadways discussed above would not be significant.

Personnel trips and equipment movement necessary to operate, inspect, or maintain the transmission line and Weaverville Switchyard would be minimal. Transmission line inspection or monitoring would be limited to one or two vehicles at any one time or be performed by aerial surveillance. Vehicle trips to the new substation would be infrequent and occur during facility inspection and maintenance. Ground inspection and maintenance of the transmission line would also be infrequent and normally not occur more than once a year. Unscheduled maintenance trips could occur if damage occurred to the transmission line; these cannot be predicted. Vegetation management activities would take place to reduce the possibility of outages and would occur about every 5 years. Most of the operation, inspection, and maintenance trips would be distributed throughout the day. Consequently, these vehicle trips would not substantially increase traffic volumes or adversely affect the LOS on area roadways or result in significant delays at intersections. As such, this impact is considered less than significant.

Traffic Delays and Unsafe Conditions for Motorists on Local Roadways

Construction of the project would require the movement of equipment and other activites near and within public and private roadways. The proposed transmission line ROW would not cross State highways. The only major regional roads that would be crossed by the proposed transmission line are Trinity Dam Boulevard and Rush Creek Road. The transmission line would also cross several mostly compacted earth and gravel rural roads with very low traffic volumes. Roadway crossings would use temporary guard structures to ensure that public safety and safe driving conditions were maintained at these crossings.

Another construction activity close to major roadways would be the proposed Weaverville Switchyard. Access to this site would be provided from the combined section of SR 3/SR 299. The access point to the proposed Weaverville Switchyard along SR 3/SR 299 has an asphalt-paved shoulder, and this section has good visibility in both traffic directions. Substation construction activities would also be more than 100 ft from SR 3/SR 299 and thus would not interfere with normal traffic flows along the highway. The access point would undergo review by Caltrans and would require an encroachment permit in accordance with the specifications established by Caltrans, District 2. Traffic delays and unsafe conditions for motorists along SR 3/SR 299 would be less than significant.

Construction activities would result in removing timber logs from the transmission line ROW and transporting these logs to mills. Logging trucks would be loaded at staging areas and would transport the logs along rural roads and State highways. Since logging trucks would follow safety and traffic regulations, logging traffic would not result in significant delays or unsafe conditions for motorists.

Logging and logging truck use on local roadways are common in Trinity County. The amount of timber that would be removed from the ROW would be very small when compared to typical timber harvests in the region. There would be several staging areas along the proposed transmission line route, further dispersing any effects on transportation. The anticipated increase in logging truck activity along roadways would be small, and it would not significantly increase the delays or change the LOS levels along local roadways or at intersections, so impacts would be less than significant.

The main potential safety-related impact associated with logging trucks would occur when they ingressed to and egressed from local rural and major roadways. However, most local residents in the county are used to logging truck activities. Logging truck movements onto major roadways would be from existing roadways and would be controlled through existing signage (e.g., stop and yield signs) and California traffic laws; they should not pose unsafe conditions over normal activities along these roadways. Although the amount of traffic along local rural roadways is very low, logging trucks moving from staging areas onto and along local rural roads could pose potential impacts and require mitigation to further minimize them. However, signage and other traffic controls normally used for trucks transporting logs onto public access roads would be used to reduce potential impacts to less than significant levels.

In the unlikely event that construction activities would require a roadway lane closure, short detour routes would be made available to avoid creating substantial delays for motorists or emergency vehicles (e.g., ambulances, fire trucks, and police cars). If required, these road closures would be very short term. Consequently, the project is not anticipated to result in a significant increase in normal response times for emergency vehicles.

Finally, the use of public roadways to move equipment necessary for transmission line construction could affect motorists along State highways and regional roadways. This impact would be less than significant because construction activities and equipment movement would be done following applicable highway safety requirements and Caltrans and Trinity County traffic regulations. The EPMs listed in section 3.10.2.2 and in **table 2-2** would serve to further reduce this potential safety and delay impact.

Construction Activities That Could Result in Damage to Local Roadways

Construction traffic, especially vehicles used for moving equipment and materials (e.g., earthmoving equipment and logging trucks), could exceed the design weight capacities on local roadways, resulting in damage to these roadways during construction. The operation of vehicles, equipment, and logging trucks over dirt roads could result in damage, especially when the roadways were wet due to snow melt, rainwater, or springs. Although such activities are not expected to result in significant damage to major area paved roadways, degradation of existing compacted dirt or gravel roads by heavy equipment or excessive construction traffic is possible. The EPMs listed above and in **table 2-2** and the permit conditions regarding erosion control and access road maintenance would ensure that this potential impact would be less than significant.

Helicopter Construction and Logging Activities That Could Disrupt Operation at Local Airports

Up to 60 helicopter operations per day would be required to construct the transmission line. Most of these helicopter operations would be to remove timber logs or to provide access to remote areas not serviceable by roads. Several different types of helicopters would be used for these operations. Large helicopters (skycranes) would be used to remove timber logs. Small helicopters would be used for conductor removal, installation of new poles, movement of work crews, and delivery of lighter loads of equipment. The main concern regarding helicopter operations would be movements over populated areas or activities adjacent to dwellings (e.g., commercial establishments and residential housing) and flights over the Trinity River or reservoirs. The FAA restricts flights to an altitude of 1,500 ft or greater over populated areas and requires a helicopter lift plan near dwellings. Helicopter operations would be in rural undeveloped areas away from populated areas and dwellings. Helicopter operations would comply with all FAA regulations and are not anticipated to pose impacts to populated locations. Helicopter operations would also be coordinated in advance with the USFS to minimize impacts to recreational areas. An Aviation Safety Plan would be prepared and approved by USFS prior to construction.

Construction activities would comply with all applicable regulations established by the FAA and/or the Trinity County Airport Land Commission. The Lonnie Pool Field/Weaverville Airport is located northeast of Weaverville near SR 3, so project flight operations would not affect flight patterns or fall under FAA height restrictions. Transmission line pole heights would be similar to or shorter than tree heights in the surrounding area, so the poles would not be a flight hazard.

Although the project would establish helicopter landing and operational facilities along or near the proposed transmission line ROW, some helicopter servicing (e.g., weekend parking, servicing, and maintenance) would likely occur at Lonnie Pool Field/Weaverville, Trinity Center, or other regional airports. All helicopter operations from these airports would comply with regional airport plans, airport flight operation requirements, and FAA regulations. Helicopter operations for the project would identify operational sites and staging areas along the transmission line to conform to appropriate regulations. The USFS requires the development of an Aviation Safety Plan that defines helicopter operations in its jurisdictional area. This plan would require approval by the USFS prior to helicopter operations in the area. Impacts from helicopter operations associated with the project would be less than significant.

3.10.2.4 Impacts from the No Action Alternative

Under the no action alternative, no facilities would be constructed, no project-related traffic would be generated, and no traffic or transportation impacts would occur.

3.11 VISUAL RESOURCES

This section discusses the visual resources in the vicinity of the project. The discussion includes an evaluation of the quality of the existing landscape and the sensitivity of the existing visual resources to potential changes associated with the project.

In evaluating the visual quality of, and modifications to, the existing landscape, the following aesthetic values were considered:

- Form: topographical variation, mountains, valleys;
- Line/pattern: canals, roads, transmission line corridors;
- Color/contrast: brightness, diversity; and
- Texture: vegetation, buildings, and disturbed areas.

The sensitivity of the existing visual resources to changes associated with the project would be based on several factors:

- The extent to which the existing landscape is already altered from its natural condition;
- The number of people within visual range of the area, including residents, highway travelers, and those involved in recreational activities; and
- The degree of public concern or agency management objectives for the quality of the landscape.

3.11.1 Affected Environment

3.11.1.1 Resource Study Area

The visual resources study area consists of viewsheds where any of the project would be seen from sensitive viewing locations, such as travel routes, residences, and recreation areas.

3.11.1.2 Issues of Environmental Concern

Issues of concern include effects on landscapes having a high visual quality, alteration of the existing landscape, and consistency with the goals and objectives of the land management plans for the area.

3.11.1.3 Characterization

Regional Setting

The project area is located within the southeastern portion of the Klamath Mountain Geomorphic Province, which is characterized by rugged topography with prominent peaks and ridges. The uplifting in the province has resulted in successive benches on the sides of canyons and in local streams, creeks, and rivers. The visual character of the county is one of a variety of steep slopes blanketed with rich forests and incised with swift cold streams draining to the west. The visual character of the project area consists of moderate to steep hillsides and ridges vegetated with a variable mosaic of coniferous forest, oak woodlands, and brush. In addition, the existing distribution line passes along the eastern slope of Lewiston Lake, approximately 1 mi, and then proceeds west along the southern edge of the fish hatchery. Much of the existing distribution line is barely noticeable from the roadways, with the exception of some road crossings due to the ROW clearance. Shrubs, brush, and other low-growing vegetation would be left to help lessen the visual effects of the ROW. In addition, these road crossings are still barely noticeable to motorists because they are not in the direct line of site for long periods of time.

Shasta-Trinity National Forest

A portion of the project lies within the STNF. The STNF is located north of San Francisco and northwest of Sacramento, in Trinity County, California. The STNF consists of 2,099,200 acres or 3,280 mi^2 in northern California (most of Segment 1 falls within this area). Four major physiographic provinces are represented within the STNF: (1) Cascade Mountains, (2) Klamath Mountains, (3) Coast Range, and (4) Sacramento Valley.

Shasta-Trinity National Forest Land and Resource Management Plan

The STNF LRMP (USFS 1995) has applicable forest goals related to visual resources (USFS 1995), including the following:

- Opportunities for development or expansion of scenic drives and vista points.
- Maintenance of diverse scenic quality throughout the forests, particularly along major travel corridors, in popular dispersed recreation areas, and in highly developed areas.
- Management activities and projects that meet adopted visual quality objectives (VQOs) of (1) preservation (P), (2) retention (R), (3) partial retention (PR), (4) modification (M), or (5) maximum modification (MM). Any proposed modification to adopted VQOs must undergo National Environmental Protection Act (NEPA) review and be approved by the forest supervisor. **Table 3.11-1** summarizes the VQOs for each management class.
- In the following two sensitive travel corridors, the foreground portions (areas located from 0.25 to 0.5 mi from the road viewer) will be managed primarily to meet the adopted VQO of R:
  - SR 299 and
  - Views from Lewiston and Trinity Lakes.

Table 3.11-1 Visual Quality Objectives for Management Classes

Class	VQO
P	Allows ecological changes only. Management activities, except for very low visual impact recreation facilities, are prohibited. This objective applies to Wilderness Areas, Primitive Areas, other classified areas, areas awaiting classification, and some unique management units that do not justify classification.
R	Provides for management activities that are not visually evident. Under retention, activities may only repeat form, line, color, and texture that are frequently found in the characteristic landscape. Changes in the size, amount, intensity, direction, and pattern of the transmission line should not be evident.
PR	Management activities remain visually subordinate to the characteristic landscape when managed according to the partial retention VQO. Activities may repeat form, line, color, or texture common to the characteristic landscape, but changes to the size, amount, intensity, direction, and pattern of the transmission line should remain visually subordinate to the characteristic landscape. Activities may also introduce form, line, color, and texture, which are found infrequently or not at all in the characteristic landscape, but they should remain subordinate to the visual strength of the characteristic landscape.
M	Under this modification, VQO management activities may visually dominate the original characteristic landscape. However, activities of vegetative and landform alteration must borrow from the naturally established form, line, color, or texture so completely and at such a scale that the transmission line’s visual characteristics are those of natural occurrences within the surrounding area or character type. Additional parts of these activities, such as structures, roads, slash, and root wads, must remain visually subordinate to the proposed composition. Activities that predominantly consist of the introduction of facilities such as buildings, signs, roads, etc., should borrow from naturally established form, line, color, and texture so completely, and at such a scale, that the transmission line’s visual characteristics are compatible with the natural surroundings.
MM	Management activities of vegetative and landform alterations may dominate the characteristic landscape. However, when viewed as background, the visual characteristics must be those of natural occurrences within the surrounding area or character type. When viewed as foreground or middleground, they may not appear to completely borrow from naturally established form, line, color, or texture. Alterations may also be out of scale or contain detail that is incongruent with natural occurrences as seen in foreground or middleground. Introduction of additional parts of these activities, such as structures, roads, slash, and root wads, must remain visually subordinate to the proposed composition as viewed in the background.

- In the following sensitive travel corridors, the foreground portions (areas located from 0.25 to 0.5 mi from the road viewer) will be managed primarily to meet the adopted VQO of PR:

  – Trinity Dam Boulevard (CR 105).

The project area is included in Management Areas P, R, and PR of the STNF LRMP (**figure 3.11-1** [USFS 1995]).

Whiskeytown-Trinity National Recreation Area

The Whiskeytown-Shasta-Trinity National Recreation Area (NRA) comprises 254,500 acres divided into three units: Whiskeytown, Shasta, and Trinity. Each of these areas encompasses a large man-made lake and its surrounding terrain. This NRA is a mecca for outdoor activities, including camping, fishing, swimming, paddling, boating, backpacking, horseback riding, mountain biking, off-roading, hiking, and hunting.

Congress established the Whiskeytown-Shasta-Trinity NRA on November 8, 1965. There are 18 NRAs under USFS management designated in the United States. This NRA is somewhat unique because it is made up of four lakes with very distinct recreation opportunities. Of the 254,500 acres that make up the NRA, 212,000 acres are managed by the STNF in the Shasta Trinity Unit. The USFS manages Shasta, Trinity, and Lewiston Lakes. The NPS manages Whiskeytown Lake within the Whiskeytown NRA. (Most of Segment 1 falls in this area; see **figure 3.13-1.**) Trinity Lake area can be divided into four subunits: the Lewiston Lake, Trinity Dam, Stuart Fork, and North Lake areas. The Shasta Lake area includes four arms: Sacramento, McCloud, Squaw, and Pit.

Trinity Unit

The Trinity unit with its four subunits provides opportunities for recreation from trout fishing in Lewiston Lake, to scenic driving along Trinity Heritage National Scenic Byway, to picturesque picnicking. Camping and trail use are among the top pastimes. The project lies within this unit.

BLM-Proposed Redding Resource Management Plan (1992)

Small portions of the project, including the proposed Weaverville Switchyard, lie within BLM-managed lands. These lands are designated as Class III (Kontz 2006). Class III objectives are to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate. The western half of the project would be located on SPI and other private lands.

Trinity County

Trinity County offers a pleasing variety of steep slopes blanketed with rich forests and incised swift cold streams draining to the west. A large percentage of the county is managed as scenic land or recreation land by various public agencies (e.g., USFS, BLM, and State and county agencies). More than 70% of the land in the county is owned by the Federal and State governments. “Scenic land” is defined in section 65561 of the Government Code of California as “open space land which possesses outstanding scenic qualities worthy of preservation.” “Recreation land” is “any area of land or water designated on the State, or any regional or local open space plan, as open space land and which is actively used for recreation purposes and open to the public for such purposes with or without charge” (Trinity County 2003b).

Scenic Byways

In 1990, the DOT Federal Highway Administration adopted a National Scenic Byway system. In 1992, the California State Legislature passed AB 126, renaming SR 299 from Redding to Arcata (formerly the Trinity Highway) the Trinity Scenic Byway. Highway 3 from Weaverville to the north has also been designated as the Trinity Heritage Scenic Byway. Rush Creek Road (204) and Trinity Dam Boulevard (106) have received the same designation to date (Trinity County 2003a).

Trinity Scenic Byway

The Trinity Scenic Byway begins at the junction of US 101 near Arcata and goes east on SR 299, past Blue Lake, Salyer, Junction City, Weaverville, Shasta, and Redding. The byway ends at the intersection of SR 299 and Interstate 5. The Trinity River Scenic Byway traverses Trinity County alongside SR 299.

Trinity Scenic Byway features coastal plains, steep granite cliffs, and densely covered forests. This historic Native American route parallels the beautiful Trinity River. Named “From the Valley Oaks to the Redwood Coast” by the USFS, it implies the range of flora and fauna found along the route. The Trinity Scenic Byway is located approximately 7 mi south of the project.

Trinity Heritage Scenic Byway

The Trinity Heritage Scenic Byway begins on Highway 3 in Weaverville. The byway leaves the highway and follows a loop to Lewiston and back around to Highway 3. The byway ends at Edgewood and the junction with Interstate 5.

The Trinity Heritage Scenic Byway is named for the historical routes of the Trinity Alps to the west and Trinity Divide country to the east. The Trinity Heritage Scenic Byway has numerous vistas and outstanding natural attractions. The Trinity Heritage Scenic Byway is located approximately 8 mi west of the project (**figure 3.11-2**).

Wild and Scenic Rivers

The Wild and Scenic Rivers Act of 1968, as amended (16 U.S.C. §§ 1271–1287), identifies distinguished rivers or portions of rivers of the nation that possess remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, or other similar values; preserve the rivers’ free-flowing condition; and protect their local environments. Since 1968, many rivers and streams have been added to the National Wild and Scenic Rivers System, including 16 rivers (and many forks and tributaries) in California, totaling more than 1,900 mi.

On January 19, 1981, certain reaches of the Trinity River were nominated by the State of California and designated as a National Wild and Scenic River by the Secretary of the Interior. The project falls within the portion of the river that is designated as Wild and Scenic (see section 3.13.1).

3.11.2 Environmental Consequences

3.11.2.1 Standards of Significance

The existing visual quality is based on evaluations of the natural landscape and existing modifications of form, line, pattern, color, contrast, and texture. The sensitivity of existing visual resources to changes associated with the project would depend on whether an area already contained modifications (in this case, buildings, roads, trails, distribution and telephone lines, and logged areas) and the degree of public concern, or agency management directives for changes to the visual landscape.

A quantitative analysis of impacts to scenic resources was based on both the effects on principal scenic features and the effects on the views from particular identified key observation points (KOPs). Several significant features were established in the STNF LRMP (USFS 1995; p. 4-28). The plan identified four significant scenic features or important KOPs on or near the project. These areas are SR 299, CR 105, and views from Lewiston Lake and Trinity Lake. Therefore, to analyze the degree of potential visual impact, five KOPs **(figures 3.11-3** through **3.11-7)** were chosen at various locations to represent views of potential concern or sensitive viewing areas. The sensitive viewing areas are CR 105, the Trinity River, Lewiston Lake, Trinity Lake, and Ackerman Campground. Each KOP was analyzed by using the above criteria. **Figure 3.11-2** depicts the locations of these KOPs.

3.11.2.2 Environmental Protection Measures

- Any steel poles used for the project would be made of weathering steel, which is self-rusting and turns dark, flat brown. Other poles in this section would be located behind existing trees, as seen from CR 105.

- Some vegetative screening would be provided between CR 105 and the existing ROW. Additional ROW clearance would be on the uphill side of the existing ROW (Segment 2), which would be cleared as needed for safety and operational reliability. Smaller shrubs and vegetation would be maintained in order to aid in screening, as described in section 3.5, thereby maintaining a 150-ft buffer between the road and the transmission line.

- Existing vegetation would provide screening along the boundary of Weaverville Switchyard. This buffer would aid in screening the switchyard from this public road.

- Development “footprints” would be minimized by placing staging areas in previously disturbed areas and away from sensitive receptors.

3.11.2.3 Impacts from the Proposed Action

The visual changes introduced by the new and upgraded portions of the proposed transmission line would vary depending on the existing transmission lines in the area. The project could create visual impacts as a result of constructing new transmission lines and a new switchyard. Impacts to visual resources could be direct and long term and last for the life of the project.

Segment 1

Segment 1 is the 60-kV overhead transmission line, referred to as the “Existing Corridor,” from the Trinity Power Plant to the Lewiston Substation. The Trinity Substation is located near Trinity Dam, on Power House Road, along the bank of the Trinity River. The project would connect three conductors and a fiber-optic cable to equipment already installed in the substation. In Segment 1, “Existing Corridor,” Western would remove the conductor and poles for the existing Trinity-Lewiston 12-kV distribution line (Trinity PUD line). The existing Trinity PUD line ROW would be expanded from about 20 to 80 ft to accommodate installation of a new 60-kV transmission line. Segment 1 would follow the existing ROW from Trinity Dam down river approximately 5.3 mi toward Lewiston. The existing corridor runs through the steep and rugged terrain of the STNF, crossing ridge tops and gullies. In addition, a 150-ft × 150-ft helicopter staging area would be located near the Trinity Substation on an existing concrete pad. The staging area would remain until construction of the project was completed. The existing transmission line would be replaced by the project and would span the river **(figure 3.11-3)**. This crossing would be approximately 1,500 ft downstream of the dam, in a Recreational segment of the Wild and Scenic River. The area where the line would cross is in a reclamation zone; however, existing lines are present, and the banks have been modified during the construction of the dam.

Segment 2

Segment 2 is the “Lewiston Tap.” Segment 2 would consist of a 1.2-mi 60-kV tap line to the Lewiston Substation and the weathering steel pole with a three-way switch at Mile 6.5 to accommodate the incoming line from the Trinity Substation, the 1.2-mi tap line, and a new line segment to the proposed Weaverville Switchyard. Segment 2 would be located west of and parallel to an existing Trinity PUD distribution line between the tap point and Lewiston Substation. Existing access roads would be used, with short spurs up to the new line from the existing access roads where needed (see **figure 2-2**). For Segment 2, “Lewiston Tap,” Western would acquire an 80-ft ROW to build a new 60-kV transmission line. Construction and maintenance of Segment 2 would parallel an existing Trinity PUD distribution line between the two points.

The Lewiston Substation is currently a small Trinity PUD distribution substation. The substation is located on Lewiston Road near the city of Lewiston and is approximately 80 ft^2. The substation is located approximately 100 ft from SR 299. The project would require upgrades to the existing facility. The existing scenic area would be characterized as having a moderate scenic quality, and the upgrade would have a less than significant impact to visual quality because the substation is already constructed and would not be expanded.

Segment 3

Segment 3 is the new 60-kV transmission line, referred to as the "New Corridor," from Lewiston to the Weaverville Switchyard. Segment 3 would require clearing a new 8.5-mi-long, 80-ft-wide ROW corridor to build a new 60-kV transmission line. The land in this portion of the project is owned primarily by SPI for timber production. Part of this area has been logged in the past. This segment would primarily use existing access roads (SPI logging roads), but upgrading and a few new spur roads to pole locations would be required in some areas (see **figure 2-2**).

The proposed Weaverville Switchyard would be constructed on a footprint approximately 110 ft × 90 ft in size. The existing scenic area is characterized as mountainous terrain, with a moderate sensitivity (**figure 3.11-5**). The project area is located east of SR 299 and south of the city of Weaverville. The proposed site is located off Little Brown Creek Road and Brown Mountain Road. An existing roadway would be used to access the substation. Any construction activities or development would be visible and noticeable to motorists traveling on SR 299, because the project site is located on a hillside above the roadway.

The majority of Segment 1 would occur in the R and PR USFS visual classification areas (see **table 3.11-1**), while small portions of Segments 2 and 3 would occur in R visual classification areas. These classes allow for management activities that are not visually evident. The project's visual obtrusion would be low for long-term impacts in Segments 1 and 2, as there are existing lines within this viewshed. Segment 3 would introduce a new line; however, the majority of this segment is located away from motorists, residents, and recreationalists because it is in a remote area of the county. Further, this portion of the line would be located adjacent to existing logging roads, which present a visual intrusion as well. Small portions of the proposed transmission line would be visible by the Weaverville Switchyard. Temporary short-term impacts would occur from construction activities as seen from roadways and sensitive viewing areas for all the segments. The visual impact of clearing vegetation for the ROW or expansion of the existing ROW would be minimized or shielded by vegetation in the area. Vegetative screening between CR 105 and the ROW would be present. Additional ROW clearance would be on the uphill side of the existing ROW (Segment 2). Views of the proposed transmission line upgrades and additions would be partially obscured by the terrain in the area. The line in this segment is also obscured from view by the surrounding forest. The transmission line would cross the Wild and Scenic Trinity River below Lewiston Dam near the fish hatchery approximately 256 ft away (**figure 3.11-4**). The crossing would be immediately adjacent to the telephone line crossing and would cross over Trinity Dam Boulevard, at which point it would traverse up the slope to the ROW. This crossing would be barely noticeable to fish hatchery visitors because of the existing telephone line and development associated with the fish hatchery and the dam and spillway. However, after crossing over Trinity Dam Boulevard, the line would be visible as it traverses up the slope to the ROW. This would occur because of the ROW clearance required. In addition, bird diverters would need to be installed on this portion of the line to minimize collisions; the diverters could increase the visibility of the line in this area. However, as described in Section 3.5, Land Use, conflicts with riparian zones in this portion of the project would be reduced to a less than significant level through use of EPMs. The near view would be minimally modified, and therefore would result in a less than significant impact.

The majority of visual impacts from implementing the project would occur during construction activities. The significance of impacts to visual resources would depend on the existing character of the resource and the amount of change to the resource (**figures 3.11-3** through **3.11-7**). Although the project area is moderate in visual quality, the amount of change is anticipated to be low. However, under a conservative approach, the project is considered to have potential impacts. The project falls into USFS Management Areas R and PR for visual resources, as well as BLM Class III lands. The project would be managed to be consistent with the management objectives for these classes. However, changes resulting from the project could alter the visual quality of the area, because some sensitive areas for scenery might or might not be screened by vegetation as a result of the removal of some existing vegetation when the current ROW was widened. The new Weaverville Switchyard would be a new facility, but it would be small and partially screened from SR 299; a majority of the project would be in remote areas where some portions are viewed as highly sensitive for scenery, but where there are few viewers. EPMs would reduce visual impacts to the extent possible. Therefore, it is anticipated that the project impacts on visual resources would be less than significant.

3.11.2.4 Impacts from the No Action Alternative

The no action alternative would result in no additional direct or indirect effects on visual resources. However, effects resulting from existing wood poles and distribution lines would continue to modify the visual quality in the project area. The poles have become a consistent intrusion into the landscape and would continue to result in a less-than-significant impact.

3.12 WATER RESOURCES

3.12.1 AFFECTED ENVIRONMENT

Water resources include surface water and groundwater resources in the study area. This section characterizes these water resources and assesses the potential impacts of the proposed action and no action alternative. This section also describes existing watershed and floodplain conditions within the study area and how the proposed action would affect them.

3.12.1.1 Resource Study Area

The project area includes the ROW for the existing Trinity PUD 12-kV power distribution line from Trinity Power Plant to Lewiston tap and the ROWs for the proposed new transmission lines from Lewiston tap to Lewiston Substation and from Lewiston tap to the proposed Weaverville Switchyard. The water resources study area includes the existing and proposed ROWs and adjacent lands along the ROWs.

The resource study area also includes perennial, intermittent, and ephemeral streams; watersheds; and floodplain portions of the Trinity River and associated smaller tributary stream floodplains crossed by or along the existing and proposed ROWs. Floodplains within the study area were determined by reviewing the Federal Emergency Management Agency (FEMA) maps of delineated floodplains.

3.12.1.2 Issues of Environmental Concern

Issues of environmental concern for water resources include (1) stream erosion; (2) introduction of sediment into the stream from access roads, construction sites, ROWs, and stream crossings due to clearing, excavation, drilling, vehicle traffic, and road construction activities, (3) contaminant spills; (4) depleted water resources; and (5) potential herbicide and pesticide contamination of surface water. The issue of environmental concern for watersheds is the potential to change the existing condition classes of the watersheds that would be crossed by the project. Issues of environmental concern for floodplains are the potential for the project to alter or impair the ability of floodplains to convey flood flows.

3.12.1.3 Characterization

There are nine RWQCBs in California. The project area lies within the jurisdiction of the North Coast RWQCB (NCRWQCB). RWQCBs develop “basin plans” for their hydrologic areas, govern requirements/issue waste discharge permits, take enforcement action against violators, and monitor water quality (SWRCB 2003).

As described in detail below, the North Coast Region is abundant in both surface water and groundwater resources. Although the North Coast Region constitutes only about 12% of the area of California, it produces about 40% of the annual runoff. This runoff contributes to flow in surface water streams, storage in lakes and reservoirs, and replenishes groundwater (NCRWQCB 2006).

Surface Water Hydrology

The Porter-Cologne Water Quality Control Act (Porter-Cologne Act) is California's comprehensive water quality control law and is a complete regulatory program designed to protect water quality and beneficial uses of the State's water. It requires the adoption of basin plans. Basin plans provide the basis to protect water quality in California and are mandated by both the Federal Clean Water Act (CWA) and Porter-Cologne Act.

For planning purposes, the California Department of Water Resources (CDWR) divides California into 10 hydrologic regions (HRs), which correspond to the State's major drainage areas. The North Coast HR encompasses a total area of approximately 19,400 mi^2, including 340 mi of scenic coastline and remote wilderness areas, as well as urbanized and agricultural areas (CDWR 2006). The North Coast HR includes all or portions of Modoc, Siskiyou, Del Norte, Trinity, Humboldt, Mendocino, Lake, and Sonoma Counties. Small areas of Shasta, Tehama, Glenn, Colusa, and Marin Counties are also within the region. The North Coast HR is defined in section 13200(a) of the Porter-Cologne Act as follows:

> "North Coast region, which comprises all basins including Lower Klamath Lake and Lost River basins draining into the Pacific Ocean from the California-Oregon State line southerly to the southerly boundary of the watershed of the Estero de San Antonio and Stemple Creek in Marin and Sonoma counties."

The North Coast HR includes portions of four geomorphic provinces: the Coast Ranges, Klamath Mountains, Cascade Range, and Modoc Plateau. The northern mountainous portion of the North Coast HR is rural and sparsely populated, primarily because of the rugged terrain. Most of the area is heavily forested. However, some irrigated agriculture occurs in the valleys.

The North Coast HR is divided into two natural drainage basins, the Klamath River Basin and the North Coastal Basin (NCRWQCB 2006). The Klamath River Basin covers an area of approximately 10,830 mi^2 and is bounded by the Oregon State border on the north, the Pacific Ocean on the west, the Redwood Creek and Mad River hydrologic units on the south, and the Sacramento Valley to the east (NCRWQCB 2006).

The Klamath River Basin includes five hydrologic units or subbasins: Winchuck River, Rogue River, Smith River, Klamath River and Trinity River. In the Trinity River subbasin, domestic, agricultural, and industrial water is supplied through surface water diversions, groundwater pumping, and springs. The Trinity River subbasin is divided into further subregions; the project would be located within the Upper and Middle Trinity River subregions (CRA 2006). The Trinity River subbasin is shown on **figure 3.12-1**. The Upper and Middle Trinity River subregions contain the Trinity Reservoir and Grass Valley-Weaver 5th field watersheds.

Surface water features in the project area include the Trinity River, Lewiston Lake, Rush Creek, and Little Browns Creek. The project ROW would also cross intermittent and ephemeral streams, as described in further detail below.

Wild and Scenic River Crossings

The segment of the Trinity River below Lewiston Dam that the proposed transmission line would cross is designated as a WSR segment. Discussion of the river segment and its crossings is provided in section 3.13.1.

Beneficial Uses

Beneficial use can be defined as a use of waters of the State for domestic, municipal, agricultural, and industrial supply; power generation; recreation; aesthetics; navigation; and protection of aquatic resources. Of the beneficial uses of water yielded from STNF watersheds annually, almost all is used for human benefit, both for consumptive and nonconsumptive uses. Trinity Lake provides water for fish habitat, recreation, hydroelectric power production, and downstream agricultural irrigation. The Trinity River Division of the CVP, which includes Trinity Dam located near the project, is the largest water development in the Klamath River Basin. Releases from Trinity Dam pass through the Trinity Power Plant to the Lewiston Reservoir, from which approximately 1 million ac-ft/yr are diverted by tunnel to the Sacramento Valley (NCRWQCB 2006). Further major developments on the Klamath and Trinity Rivers are prohibited by California’s Wild and Scenic Rivers Act. Only minor additional surface water development for local use is permitted, primarily because of the high costs associated with agriculture in the area. Other surface water development projects in the region include Reclamation’s Klamath Project, Humboldt Bay Municipal Water District’s Ruth Lake, and the USACE’s Russian River Project.

Watershed Condition

Watershed condition is a description of the health of all or a portion of a watershed, based on factors affecting hydrologic functions and soil productivity. Land management activities can influence the natural hydrologic function of a watershed through changes in stream flows, erosion, soil compaction, and vegetation removal. These activities were evaluated further in Section 3.4, Geology and Soils. Cumulative effects are also significant with regard to watershed condition because they can influence the magnitude of the types of changes described above. Watershed condition can be classified by evaluating the cumulative watershed impacts, described in further detail below.

In 1992 under California’s Clean Water Act, the Trinity River watershed was listed as water-quality-impaired due to the presence of sediment. In 2001, a water quality management plan or total maximum daily load (TMDL) was developed by the EPA to reduce the amount of sediment. The TMDL sets the amount of sediment load for a stream or a portion of a stream and specifies the amount of sediment reduction needed to avoid exceeding water quality standards. The Upper Trinity River and Middle Trinity River subregions (where the project would be located) of the Trinity River watershed are listed with a medium TMDL priority (NCRWQCB 2003). Sediment is the water quality parameter of greatest concern in the upper basin. Concerns have also been noted with respect to the upper basin’s effect on water quality below Trinity Lake following large floods.

Cumulative Watershed Effects Analysis

The USFS prepared a cumulative watershed effects (CWE) analysis for the STNF (USFS 2005a). For this project, all of Segments 1 and 2 and all but approximately 3.26 mi of Segment 3 are within the area covered by the analyses.

The standard CWE method used by the STNF is the equivalent roaded area (ERA) disturbance index model. ERA is a quantitative model that provides an indicator of watershed conditions that can be used to identify watersheds at risk. The current level of disturbance within a given watershed is expressed as percent ERA. This model is used to calculate the ERA for each watershed and compared them to the forest plan threshold of concern (TOC) to determine watershed condition class (WCC). TOC is a measure of watershed sensitivity and is calculated on the basis of soil erodibility, slope, mass-wasting potential, and 25-year peak flow. TOC is the theoretical maximum disturbance level acceptable. Three WCCs are defined as follows:

- Class 1: ERA is less than 40% TOC (or ERA/TOC < 0.40); these watersheds support beneficial uses and are considered healthy.
- Class 2: ERA is between 40% and 80% TOC; these watersheds are considered at risk of being able to support beneficial uses and are considered moderate.
- Class 3: ERA is greater than 80% TOC; these watersheds do not support beneficial uses and are considered impaired.

The analysis was conducted for 14-digit hydrologic unit code (or HUC-7) drainages, which vary in size from 7,500 to 10,000 acres. Included were five HUC-7 watersheds that would be crossed by the project. The results of the analysis for the five watersheds are provided in **table 3.12-1** and represent current conditions within the project area and projected conditions if the project was built. Three of the five watersheds within the project area (top three in table) were classified as healthy (Class 1). Lower Rush Creek and Little Browns Creek were classified as impaired (Class 3). The road network and the rate of timber harvest are the main causes of the high ERA for Lower Rush Creek. The main causes of the high ERA for Little Browns Creek include urban development, the road network, and the rate of timber harvest. Past projects that have had the

Table 3.12-1 CWE Analysis for Watersheds within the Project Area[a]

Watershed Name	HUC-7 Acres	% ERA	% TOC	% ERA/ % TOC	WCC
Eastmann Gulch-Mooney Gulch[b]	9,837	2.8 (2.8)	16.0	0.18 (0.18)	1
Baker Gulch-Lewiston Lake[b]	6,907	5.0 (5.1)	16.0	0.31 (0.31)	1
Hoadley Gulch-Trinity River[b]	8,302	4.7 (4.8)	16.0	0.29 (0.30)	1
Lower Rush Creek[c]	8,702	18.4 (18.5)	16.0	1.15 (1.16)	3
Little Browns Creek[c]	7,598	15 (15.1)	16.0	0.94 (0.94)	3

[a] Values in parentheses are projected and are from USFS (2007d). NA = not available.
Sources: b = USFS (2005a); c = USFS (2006c).

greatest effects on the condition of these five watersheds include mining, logging, and the construction of Trinity Dam, which led to the creation of Trinity Lake. The soils in the project area also have a high to very high erodibility factor (see section 3.4.2.2). Today, timber harvest activities and road construction and maintenance have the greatest influence on watersheds. (The values in parentheses in **table 3.12-1** are estimates that include the impacts from the project and are discussed in Environmental Consequences.)

Waters of the United States and Wetlands

Trinity River (two crossings), Little Browns Creek, Rush Creek, 32 intermittent and aphemeral streams, and 10 wetlands would be crossed by the proposed transmission line and existing or proposed access roads. Most of the wetlands within the project area are associated with streams and are 5 to 10 ft wide. Three types of wetlands were identified: palustrine emergent, palustrine scrub/shrub, and riverine rocky shore. Vegetation within the emergent wetlands includes sedges (*Carex* spp.), bulrushes (*Scirpus* spp.), redtop (*Agrostis alba*), field horsetail (*Equisetum arvense*), reed canarygrass (*Phalaris arundinacea*), and panicled aster (*Aster simplex*). The palustrine scrub/shrub wetlands were dominated by sandbar and yellow willow (*Salix exigua* and *S. lutea*). Vegetation within the riverine rocky shore wetlands included sandbar willow, reed canarygrass, redtop, panicled aster, and field horsetail (Western 2007b).

In a letter dated August 31, 2007, the U.S. Army Corps of Engineers (USACE) determined that Trinity River, Lewiston Lake, Rush Creek, Little Browns Creek, 28 intermittent and ephemeral streams, and 10 wetlands within the project area are within its jurisdiction under the provisions of section 404 of the Clean Water Act (CWA) as waters of the United States. Western conducted a site visit on October 3 to 5, 2007, to reassess the condition of existing access roads and locations of new spur roads. During that time, five additional streams were identified within the project area. Western proposed these streams as water of the United States and submitted information to the USACE. Approximately 2.4 acres of jurisdictional waters of the United States are located within the ROW segments; this acreage consists of 0.3 acre of wetland and 2.1 acres of other waters of the United States.

“Waters of the United States” is an encompassing phrase used by the USACE to designate areas that are regulated under section 404 of the CWA. Waters of the United States include streams, ponds, lakes, and wetlands. The ordinary high water mark (OHWM) represents the landward extent or limit of USACE jurisdiction over nontidal waters of the United States when adjacent (e.g., bordering, contiguous, or neighboring) wetlands are not present (33 CFR 328.4[c1]). The USACE defines the OHWM as “that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas” (33 CFR 328.3[e]).

For regulatory purposes, the USACE defines wetlands as areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions (33 CFR 328.3, 40 CFR 230.3). Wetlands that are subject to Federal jurisdiction must normally exhibit positive indicators for three technical criteria: hydrophytic vegetation, wetland hydrology, and hydric soils as identified in the 1987 USACE Wetland Delineation Manual (Environmental Laboratory 1987). Jurisdictional wetlands are those wetlands that are connected to waters of the United States.

Surface Water Regulations

Activities affecting water resources in the project area would fall under applicable provisions of the CWA (33 U.S.C. §§ 1251–1387) — especially the section 404 (31 U.S.C. § 1344) permitting requirements, the section 401 (33 U.S.C. § 1341) water quality certification requirements, and the section 402 (40 CFR parts 122–124) stormwater discharge permitting requirements — as well as the permitting requirements of section 10 of the Rivers and Harbors Act (33 U.S.C. § 403). The CWA contains provisions that protect water quality and prohibit discharge of sediments in jurisdictional waters of the United States. The USACE and EPA have regulatory authority under the CWA. The USACE has regulatory authority under the Rivers and Harbors Act. There are no navigable waters of the United States within the project area; therefore, the Rivers and Harbors Act does not apply to this project.

The USACE regulates placement of dredge or fill material into jurisdictional waters of the United States, including wetlands, under section 404 of the CWA. "Discharge of fill material" is defined as the addition of material into waters of the United States, including but not limited to the following: placement of material that is necessary for the construction of any structure or impoundment requiring rock, sand, dirt, or other material for its construction; site-development fills for recreational, industrial, commercial, residential, and other uses; causeways or road fills; and fill for intake and outfall pipes and subaqueous utility lines (33 CFR 328.2(f)). In addition, section 404 of the CWA requires that any applicant must apply for a Federal permit to conduct any activity that may result in a discharge of a pollutant into waters of the United States (33 U.S.C. § 1341).

If the OHWM is altered or if dredge or fill material is placed within jurisdictional waters of the United States, the USACE may require individual or nationwide permits pursuant to section 404 of the CWA (33 U.S.C. § 1344). In order to estimate the project's impacts, waters of the United States must be identified and a wetlands delineation report must be completed by using the 1987 USACE methods to document and report wetlands. The waters of the United States and wetland delineation report are sent to the applicable USACE office for a jurisdictional determination review. This information is used to determine what type of permit might be required for construction and operation of a proposed project.

Compliance with the CWA is necessary if a project would result in an alteration of, or discharge into, jurisdictional waters of the United States. Each region's basin plan requires, under section 401 of the CWA, that the project will not result in violations of applicable water quality standards.

Under section 402 of the CWA, a project would be required to obtain a permit for stormwater pollution prevention (SWPP) and to develop an SWPP plan prior to initiating construction activities. The EPA is the Federal agency responsible for implementing the requirements of the

NPDES; however, the SWRCB has been delegated with enforcement responsibilities for California.

For the project, a NPDES general permit would be required from the NCRWQCB for stormwater runoff. The SWPP plan would outline best management practices (BMPs), also referred to as EPMs in this EIS, to minimize water quality impacts during construction. The permit for stormwater runoff is a general construction activity permit. BMPs for construction activities typically include erosion control measures and restoration of disturbed areas. The SWPP plan typically includes:

- An outline of the areas of vegetative soil cover or native vegetation on site that will remain undisturbed during the construction project;
- An outline of all areas of soil disturbance, including cut or fill areas that will be stabilized during the rainy season by temporary or permanent erosion control measures, such as seeding, mulch, or blankets;
- An outline of the areas of soil disturbance, cut, or fill that will be left exposed during any part of the rainy season, representing areas of potential soil erosion where sediment control BMPs would have to be used during construction;
- A proposed schedule for implementing erosion control measures;
- A description of the BMPs and control practices to be used for both temporary and permanent erosion control measures; and
- A description of the BMPs to reduce wind erosion at all times, with particular attention paid to stockpiled materials.

Water quality is continually maintained and improved through the application of BMPs, as described above. In cooperation with the RWQCB, implementation of BMPs is monitored during and after construction of a project to assess effectiveness and to ensure that the BMPs have met their objectives to protect water quality. BMPs for managing water quality on NFS lands are outlined in USFS (2000).

Activities affecting wetlands are also regulated under Executive Order (EO) 11990, “Protection of Wetlands” (42 FR 26961). DOE policy and procedures in 10 CFR part 1022 ensure that DOE activities in wetlands comply with the EO requirements.

Water Board Waiver

Independent of the CWA compliance activities described above, the project must also disclose watershed effects and comply with the State silvicultural waiver, which is a categorical waiver for discharges related to timber harvest activities on Federal lands managed by the USFS. In order to comply with the silvicultural waiver, the USFS is required to:

- Conduct a multidisciplinary environmental review of proposed activities, including a CWE analysis;
- Include specific BMPs and additional control measures, as needed, to reduce the potential for CWE and assure compliance with applicable water quality control plans;
- Include, as appropriate, affected and other interested parties in project planning early in the process in order to allow reasonable opportunity to comment on and/or challenge individual proposals; and
- Submit draft and final environmental decision documents that contain document compliance with the conditions described above.

This EIS includes the substance of, or it documents the activities that have been conducted to meet, the above USFS requirements.

Groundwater Basins

A groundwater basin is defined as an area underlain by permeable materials capable of furnishing a significant supply of groundwater to wells or storing a significant amount of water. Groundwater development in the North Coast HR occurs along the coast, near the mouths of some of the region's major rivers, on the adjacent narrow marine terraces, or in the inland river valleys and basins. Reliability of these supplies varies significantly from area to area. Basin boundaries are defined by the CDWR (2003a) on the basis of the following features:

- Impermeable bedrock;
- Constrictions in permeable materials (a narrow gap in impermeable material generally forms a basin boundary as the result of groundwater flow constriction in these areas);
- Faults (a fault that crosses permeable materials generally forms a barrier to groundwater movement);
- Low permeability zones (areas of clay or other fine-grained material that have a significant areal or vertical extent that generally forms a barrier to groundwater movement);
- Groundwater divides (a groundwater divide generally forms a barrier to groundwater movement and has noticeably divergent groundwater flow directions on either side, with the water table sloping away from the divide); and
- Adjudicated basin boundaries (basin boundaries established by court orders).

As described above, no groundwater basin or subbasin is located in the project area (CDWR 2003a).

Precipitation

Precipitation over the North Coast Region is greater than it is over any other part of California, and damaging floods are a fairly frequent hazard (CDWR 2006). Particularly devastating floods occurred in the North Coast area in December 1955, December 1964, and February 1986. The Trinity River experienced three large flood events in 1964, 1974, and 1997. Average annual precipitation for several recording stations in the project area is shown in **table 3.12-2** (WRCC 2006).

Table 3.12-2 Mean Precipitation in Project Area (in.)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Trinity Dam Vista Point	7.41	4.46	3.85	2.05	1.07	0.51	0.05	0.37	0.70	2.34	6.87	7.11	36.79
Trinity River Hatchery	5.47	5.22	4.62	2.12	1.59	0.68	0.18	0.29	0.79	1.70	4.33	6.07	33.06
Weaverville	7.30	5.67	3.89	2.18	1.35	0.70	0.18	0.34	0.77	2.27	5.18	7.29	37.11

Source: WRCC (2006).

Ample precipitation in combination with the mild climate found over most of the North Coast Region has provided conditions amenable to a wealth of fish, wildlife, and scenic resources. The mountainous nature of the region, with its dense coniferous forests interspersed with grassy or chaparral-covered slopes, provides shelter and food for deer, elk, bear, mountain lion, furbearers, and many upland bird and small mammal species. The numerous streams and rivers of the region contain anadromous fish, and the reservoirs, although few in number, support both coldwater and warmwater fisheries.

Floodplains

Floodplains perform the natural, vital function of conveying and dissipating the volume and energy of peak surface runoff flows downstream. Periodic flood flows form and sustain specific habitat types (such as wetland and riparian areas) within the floodplains. Environmental regulations have been developed to preserve unimpaired flood flows through established floodplains, prevent flood-related damage to downstream resources, and protect unique habitat types and species.

Activities affecting floodplains are regulated under applicable provisions of EO 11988, Floodplain Management (42 FR 26951, May 24, 1977). The proposed action would be required to comply with EO 11988, which requires Federal agencies to prepare a floodplain assessment for projects located in or affected by floodplains.

Two types of floodplains were identified in the study area. The 100-year floodplain has a 1% chance of flooding in any given year. The 500-year floodplain has a 0.2% chance of flooding in any given year (FEMA 2006). The likelihood of occurrence is based on historic hydrology; future flood flows may be more or less frequent.

The transmission line in Segment 2 would span the 100-year floodplain of Rush Creek. Rush Creek at this location is considered Zone A (a special flood hazard area inundated by 100-year floods). No base flood elevations have been determined for this location. The 500-year floodplain areas are located south of the project ROW, also along Rush Creek. All remaining portions of the project ROW are located in Zone X (areas determined to be outside the 500-year floodplain). Floodplains in the project area are shown on **figure 3.12-2**.

3.12.2 ENVIRONMENTAL CONSEQUENCES

This section describes potential impacts to water resources near or along the project area that could be associated with the construction, operation, and maintenance of the transmission line, ROW, and supporting facilities.

3.12.2.1 Standards of Significance

The following criteria are used to assess the significance of potential impacts on water resources during construction, operation, and maintenance of the project. A significant water resources impact would occur if construction, operation, and maintenance of the project would:

- Result in discharges of contaminants or significant quantities of sediment into waters or watercourses,
- Substantially deplete surface or groundwater resources,
- Substantially alter normal drainage patterns or the normal flow of a water body,
- Substantially alter designated floodplain areas, or
- Change a watershed condition from healthy (Class 1) to moderate (Class 2) or from moderate to impaired (Class 3).

3.12.2.2 Environmental Protection Measures

The EPMs for water resources from **table 2-2** include the following:

a. Excavated material or other construction materials would not be stockpiled or deposited near or on stream banks, lake shorelines, or other watercourse perimeters where they could be washed away by high water or storm runoff or could encroach, in any way, upon the watercourse.

b. Irrigation system features would be avoided to the extent practicable in the siting of new structures and access roads.

c. Dewatering work for structure foundations or earthwork operations adjacent to, or encroaching on, streams or watercourses would be conducted to prevent muddy water and eroded materials from entering the streams or watercourses with construction of interceptors.

d. Drainage control structures would be used where necessary to direct surface drainage away from disturbance areas and to minimize runoff and sediment deposition downslope from all disturbed areas. These structures would include culverts, water bars, and cross drains.

e. Earth material would not be excavated from, nor would excavated material be stored in, any stream, swale, lake, or wetland (USFS Region 2 2000).

f. Roads and trails would be kept out of wetlands. Crossing bottoms would be set at natural levels of channel beds and wet meadow surface. Actions that might dewater or reduce water budgets in wetlands would be avoided (USFS Region 2 2000).

g. Soil-disturbing actions would be avoided during periods of heavy rain or wet soils. Travel restrictions would be applied to protect soil and water (USFS Region 2 2000).

h. Equipment and vehicles would not be washed in streams or wetlands (CASQA 2003).

i. Vegetated buffers would be maintained near streams and wetlands. Silt fences could be used along edges of streams and wetlands to prevent erosion and transport of disturbed soil, including spoil piles (CASQA 2003).

j. Sediment discharge into streams, lakes, and wetlands near construction sites would be minimized (CASQA 2003).

   – Vegetated buffers on slopes could be used to trap sediment and promote groundwater recharge.
   – Riparian vegetation could be planted and used to stabilize stream banks.
   – Earth dikes, swales, and lined ditches could be used to divert work-site runoff that would otherwise enter a disturbed stream.
   – Certified weed-free straw bale barriers could be installed to control sediment in runoff water. Straw bale barriers would be installed only where sediment-laden water could pond, thus allowing the sediment to settle out.
   – Check dams (i.e., small barriers constructed of rock, gravel bags, sandbags, or fiber rolls) could be placed across a constructed swale or drainage ditch to reduce the velocity of flowing water, allowing sediment to settle and reducing erosion.
   – In an effort to minimize road construction and the effects associated with it, the construction of access roads between pole locations 3/1 and 4/7 would be limited to the use of tracked hole digging equipment, such as a hydraulic track drill, during construction.

k. Stream channel/wash crossings would be built.

   – Where access roads were improved to allow heavy construction equipment access, the approaches to stream crossings would be rocked to minimize sedimentation on USFS and BLM land. On SPI land, the whole road would be graveled.
   – Rocked ford crossings would be used. Sites with a low potential for erosion would be selected for building fords. The fords would be constructed of clean, washed gravel or rocks and built in dry summer months. Cellular confinement system blocks could be

used to reduce sediment entering into the streams. Fishery agencies would be consulted with regard to the design of the rocked fords.

l. Roads and other disturbed sites would be constructed to minimize sediment discharge into streams, lakes, and wetlands (USFS Region 2 2000).

- All roads, trails, and other soil disturbances would be designed to meet the minimum standard for their use and to "roll" with the terrain as feasible. Slope hill cuts would be minimized.
- Erosion controls that complied with county, State, and Federal standards would be applied, and practices such as erecting jute netting, silt fences, and check dams near disturbed areas would be implemented.
- Filter strips and, if needed, sediment traps would be used to keep all sand-sized sediment on the land, and disturbed soil would be isolated from streams, lakes, and wetlands. Runoff would be dispersed into filter strips.
- Sediment traps would be keyed into the ground and cleaned out when 80% full.
- Sediment would be removed to a stable, upland site with a gentle slope and revegetated.
- Heavy equipment would be kept out of filter strips except when used to do restoration work or build hardened stream or lake approaches. Logs would be gathered out of each filter strip with minimum disturbances of ground cover.
- Road ditches and cross drains would be designed to limit flow to ditch capacity and prevent ditch erosion and failure.
- Cross drains would be installed to disperse runoff into filter strips and to minimize the amount of disturbed areas connected to the drains.
- Cross drains would be spaced from no more than 120 ft apart in highly erodible soils on steep grades, to no more than 1,000 ft apart in resistant soils on flat grades.
- Cross drains would be emptied onto stable slopes that dispersed runoff into filter strips. On soils that might gully, outlets would be armored to disperse runoff.
- Cross-drain spacing would be tightened so gullies would not be created.
- Ditches would not be disturbed during maintenance unless maintenance was needed to restore drainage capacity or repair damage. The cut slope would not be undercut.

m. New sources of chemical and pathogenic pollutants would be placed where they could not reach surface water or groundwater (USFS Region 2 2000).

- Sanitary sites and drill pads would be placed outside the water influence zone.
- Vehicle service and fuel areas, chemical storage and use areas, and waste dumps and areas would be located on gentle upland sites. Mixing, loading, and cleaning would be done on upland sites with gentle slopes. Chemicals and containers would be disposed of in State-certified disposal areas.

n. Runoff controls would be applied to isolate new pollutant sources from surface water and groundwater (USFS Region 2 2000).

- Contour berms and trenches would be installed around vehicle service and refueling areas, chemical storage and use areas, and waste dumps to fully contain spills. Liners would be used as needed to prevent seepage into groundwater.

o. Chemicals would be applied by using methods that minimized the risk of them entering surface water and groundwater (BLM 2005).

   - When pesticides and herbicides would be used, the goal would be to minimize unintended impacts to soil and surface water bodies. Common practices would include but not be limited to: (1) minimizing the use of pesticides and herbicides in areas with sandy soils near sensitive areas; (2) minimizing their use in areas with high soil mobility; (3) maintaining the buffer between herbicide and pesticide treatment areas and water bodies; (4) considering the climate, soil type, slope, and vegetation type in determining the risk of herbicide and pesticide contamination; and (5) evaluating soil characteristics prior to pesticide and herbicide application, to assess the likelihood of their transport in soil.
   - Pesticides with half-lives of 3 months or less would be favored. They would be applied at the lowest effective rates, as large droplets or pellets. Label instructions would be followed. Selective treatment would be favored. Only aquatic-labeled chemicals would be used in the water influence zone.
   - Nontoxic, nonhazardous drilling fluids would be used when feasible.

p. Runoff from the construction site would be controlled and would meet the RWQCB stormwater requirements. An NPDES permit would be obtained from the RWQCB.

q. An erosion and sedimentation control plan, as well as an SWPP plan, would be prepared in accordance with Federal and State regulations.

EPMs would also include all conditions to prevent erosion contained in USFS, BLM, and Reclamation easement and permit agreements. These land management agencies are knowledgeable about local conditions and know best which requirements are most effective.

The USFS was designated by the SWRCB as the Water Quality Management Agency for NFS lands in California through the execution of a formal Management Agency Agreement in 1981. The USFS manages water quality by implementing BMPs (USFS 2000). Practice 7-5 describes the control of activities under Special Use Permit (SUP) to protect water quality. As described by that practice, conditions to protect water quality would be included in the SUP. The EPMs described above will be incorporated into the SUP issued by the USFS in compliance with this BMP. The USFS will also incorporate measures in the Timber Sale contract to protect water quality consistent with BMPs, including the following practices:

- 1.4, Use of Sale Area Maps for designating water quality protection needs;
- 1.8, Streamside Management Zone designation;
- 1.13, Erosion prevention and control measures during timber sale operations; and
- 1.19, Stream course and aquatic protection.

3.12.2.3 Impacts from the Proposed Action

Discharge of Contaminants or Sediments

The proposed action would use fuels (e.g., gasoline and diesel) and other substances (e.g., herbicides, oil, hydraulic fluid, lubricants, paint, and solvents) during construction, operation, and maintenance of the transmission line. Use and disposal of these materials would be in compliance with all Federal and State regulations for proper use and disposal. As a result of implementing the EPMs described above, the potential for spills that would result in contamination of a water course or groundwater would be small. Spill kits would also be present on site, and personnel would be trained in spill response and containment.

During construction, vegetation would be removed from the soil surfaces. In addition, grading, excavation, and other construction activities would expose soils. These activities would create an increased potential for erosion and sediment discharge into nearby water courses. Pursuant to applicable Federal regulations, Western would obtain a general permit from the RWQCB under the NPDES Stormwater Program for proposed construction activities. The general permit requires the implementation of BMPs to reduce pollutant loads into the waters of the State and to minimize erosion, where appropriate. An erosion and sedimentation control plan, as well as an SWPP plan, would be developed in accordance with Federal and State regulations. Also, implementing the EPMs described above and in section 3.4.2.2 would reduce the potential sedimentation impacts to small.

Table 3.12-3 lists the waters of the United States and wetlands by number, water body type, and proposed construction activity. Because of the steep topography, most of the waters of the United States run perpendicular to the project area. Most of the streams identified as waters of the United States would be spanned by the transmission lines, and no tower structures would be placed within any OHWM. The five streams with culverts on the west end of the project area, north of the Weaverville Switchyard, would be avoided by the transmission line and crossed only by the existing access road. Fourteen streams would be impacted by access road improvements across or adjacent to streams; one additional stream would be impacted by construction of a new spur road. Work in these 15 streams would consist of the placement of clean rock in streams, removal and/or replacement of culverts, or gravelling of a road across dry streams. If a culvert was removed and not replaced, the crossing would be converted to a low-water crossing. Local rock not within a cultural resource site would be used where possible. These activities would impact about 0.07 acre of jurisdictional waters of the United States. The project meets the requirements for a non-notifying Nationwide Permit 12 (Utility Line Activities) under section 404 of the CWA. Western and its contractors would comply with the 28 general conditions of nationwide permits (see Appendix F). Western has applied for section 401 water quality certification. Western and its contractors would comply with the conditions of that certification.

Wetland impacts can result from the placement of fill, the disturbance of hydrologic patterns, increased sedimentation from disturbed area runoff, and increased access by humans and invasive plants. Construction of the transmission line would not occur within any jurisdictional wetlands. No access road improvements would occur within wetlands. Tree or shrub removal might initially result in indirect wetland impacts, such as changes in soil moisture, erosion of

Table 3.12-3 Waters of the United States and Wetlands

Waters of U.S. No.	Wetland No.	Water Body Type	Construction Activity
WUS-1	W-1 W-2	Perennial (Trinity River)	Spanned by transmission line
WUS-2		Ephemeral	Improve access road across stream
WUS-3		Ephemeral	Spanned by transmission line
WUS-4		Ephemeral (Bear Gulch)	Spanned by transmission line
WUS-5		Intermittent (Mooney Gulch)	Spanned by transmission line; improve access road across stream
WUS-6		Ephemeral	Spanned by transmission line
WUS-7		Ephemeral	Spanned by transmission line; improve access road across stream
WUS-8		Ephemeral	Spanned by transmission line
WUS-9		Ephemeral	Spanned by transmission line
WUS-10		Intermittent (Eastman Gulch)	Spanned by transmission line; improve access road across stream
WUS-11		Ephemeral	Spanned by transmission line; improve access road across stream
WUS-12		Intermittent (Jennings Gulch)	Spanned by transmission line; improve access road across stream
WUS-13		Ephemeral	Spanned by transmission line
WUS-14		Ephemeral	Spanned by transmission line; improve access road across stream
WUS-15		Ephemeral	Spanned by transmission line; improve access road across stream
WUS-16		Ephemeral	Spanned by transmission line
WUS-17		Perennial (Lewiston Lake)	None
WUS-18	W-3 W-4	Perennial (Trinity River)	Spanned by transmission line
WUS-19		Perennial (Rush Creek)	Spanned by transmission line
WUS-20	W-5	Ephemeral (Muckawee Gulch)	Spanned by transmission line
WUS-21		Ephemeral	Spanned by transmission line; improve access road above stream (culvert below road)
WUS-22	W-6	Ephemeral (Trinity House Gulch)	Spanned by transmission line; improve access road across stream
WUS-23	W-7	Ephemeral	Spanned by transmission line; improve access road across stream
WUS-24		Ephemeral	Spanned by transmission line; improve access road across stream
WUS-25	W-8	Ephemeral	Spanned by transmission line; improve access road across stream
WUS-26	W-9	Ephemeral	Spanned by transmission line; improve access road across stream
WUS-27		Ephemeral	Spanned by transmission line; improve access road across stream (culvert below road)
WUS-28		Ephemeral	Spanned by transmission line
WUS-29		Ephemeral	None (outside project area)
WUS-30		Ephemeral	Spanned by transmission line; improve access road across and adjacent to stream
WUS-31		Ephemeral (Limekiln Gulch)	Spanned by transmission line; new access road across stream
WUS-32		Ephemeral	None
WUS-33	W-10	Perennial (Little Browns Creek)	Spanned by transmission line
WUS-34		Ephemeral	Improve access road above stream (culvert below road)

Table 3.12-3 (Cont.)

Waters of U.S. No.	Wetland No.	Water Body Type	Construction Activity
WUS-35		Ephemeral	Improve access road above stream (culvert below road)
WUS-36		Ephemeral	Improve access road above stream (culvert below road)
WUS-37		Ephemeral	Improve access road above stream (culvert below road)
WUS-38		Ephemeral	Improve access road above stream (culvert below road)
WUS-39		Ephemeral	Spanned by transmission line

exposed substrates, or sedimentation of downgradient wetland areas. Removal of woody vegetation would not result in a change in total wetland area.

Construction activities could also result in indirect impacts on wetlands, such as soil compaction or alteration of surface runoff patterns where heavy equipment was operated on upland areas adjacent to wetlands. Erosion of soils from nearby upland areas could result in sedimentation in wetlands. Spills of fuels or other fluids (e.g., herbicides) in or near wetlands could contaminate wetland soils and adversely affect wetland biota.

The implementation of mitigation measures would help avoid or minimize indirect impacts to wetlands. ROW maintenance within wetland areas would be primarily limited to cutting only those trees that could present a safety hazard to the transmission line before the next 5-year cutting cycle.

Overall, impacts to jurisdictional waters of the United States and wetlands would be minor.

During maintenance of the project ROW, the application of herbicides might be necessary to control noxious weeds and prevent the regrowth of undesirable or incompatible native vegetation. Herbicide application is discussed further in Section 3.2, Biological Resources. It would take place in accordance with label directions, with the EPMs described in that section and in section 3.12.2.2, and with the *Integrated Vegetation Management Environmental Guidance Manual* (Western 2007a).

Groundwater

Because no major groundwater basin or subbasin is traversed by the project area and because potential spills of chemicals used during construction, operation, and maintenance would be small, the impact on groundwater quality would not be significant.

Depletion of Available Water Resources

Uses of water for the project might include dust control and potable water for drinking. Water could be obtained from a variety of currently available sources in the area. Impacts to water supplies would not be significant because water could be obtained from more than one existing source, impacts would be short term (during construction), and water use during construction would be extremely limited. It is not anticipated that the project would use or discharge water during operation or maintenance activities. Thus, impacts would be small, and no mitigation would be required.

Alteration of Existing Drainage Patterns

Grading and ground disturbance within the project ROW, and the construction and modification of access roads, could alter existing drainage patterns. This change could result in potentially significant impacts. Land within the ROW would not be completely cleared of vegetation; access road improvements and new spur road construction would occur only where required and would impact only 0.07 acre of streams at road crossings. With the implementation of the EPMs described above, potential impacts to existing drainage patterns would be small. Moreover, the introduction of new, impervious surface areas to the project area would be limited, since existing and new access road surfaces and the Weaverville Switchyard would be natural and would contain features that would facilitate drainage (e.g., water bars and cross drains) and limit erosion potential.

Alteration of Existing Floodplain Areas

Portions of the project ROW would cross floodplains; however, the majority of the new poles would be located outside the floodplains. Where the installation of new poles within floodplains would be unavoidable, proposed structures would be designed to withstand flood events. Minor erosion or sedimentation might occur during construction. Disturbed areas would be regraded to preconstruction contours. Portions of existing access roads in need of repair are located in the Trinity River floodplain below Trinity Dam and in the Little Browns Creek floodplain. New poles and access road repair would not alter surface water flow characteristics of a floodplain, change drainage patterns, or impede or redirect flood flows. These activities would not increase scouring or increase the potential for a flood loss. Therefore, the risk to project features related to flooding would be negligible.

The proposed transmission line would cross the Trinity River below Lewiston Dam. The crossing is located at a WSR segment classified as Recreational. The impact analysis of the WSR segment is provided in section 3.13.2.

Change in Watershed Condition Class

A qualitative CWE analysis for the proposed action was conducted to address potential watershed effects from ground-disturbing activities on both public and private lands. A quantitative analysis was completed on the basis of the following:

- To the extent possible, low-lying vegetation within the new or expanded ROW would not be cleared (see section 2.3.3 for ROW clearing).
- In areas with steep terrain, vegetation clearing and grading would be limited to pole structures, and vegetation would be removed by helicopter.
- New spur roads would be reclaimed. Although they would be kept for future use, they would not be maintained as a road cleared of vegetation.

Ground-disturbing activities for the proposed action would include vegetation clearing within the ROW, construction of 4.4 mi of new spur roads, and repair of existing access roads. These construction activities would permanently disturb 159.2 acres (see **table 2-1** for details). Activities causing temporary ground disturbance of 31 acres would involve pole bases, guy wire buffer areas, site pull areas outside the ROW, construction staging areas and headquarters, and helipads.

Segment 1 (6.5-mi long) would be located within an existing transmission line ROW. Using the existing ROW would reduce the need to acquire a new ROW and construct access roads. Installation of the new transmission line would require expanding the 20-ft-wide ROW to 80 ft. Segments 2 (1.2-mi long) and 3 (8.5-mi long) would require acquisition of a new 80-ft-wide ROW. Segment 1 is primarily Federal land; Segment 2 is a mix of Federal and private land; and the majority of Segment 3 is owned by SPI and managed for timber production. The Weaverville Switchyard would be located on public property. Construction activities for the switchyard would disturb about 0.2 acre.

The clearing of the ROW and any new access roads would be accomplished under the clearing specifications described in section 2.4.1.2. The target would be to remove enough vegetation within the ROW so that return visits to maintain conductor clearances would be required only about every 5 years. Most of the ROW would remain in a shrub or low-tree cover type. The clearing specifications include the following:

- Trees would be cut off at ground level, and the stumps left in place for erosion control.
- Where vegetation would not interfere with construction or operation of the project, understory plants, shrubs, and low-growing brush or tree species would be left in place to reduce erosion potential and to preserve habitat.
- More woody vegetation found at ravine crossings would be retained because of higher conductor clearances.
- Vegetation would be completely cleared within an approximate 5-ft diameter around pole structures. Shrubs and ground cover plants outside the 5-ft diameter would be left in place to the extent possible.
- Trees growing outside the ROW that might fall into the line (danger trees) would be removed.
- Limited clearing and grading at pole structures would occur where access would be difficult because of steep terrain, slope, soil, or other conditions.
- Within Segment 1, most of which is on NFS lands, approximately 60 of the 103 new poles would be installed by using helicopter construction, and all ROW clearing would be done by helicopter.

Commercial timber generated from ROW clearing would be purchased from the landowner or land management agency and sold through timber sales. Periodic vegetation clearing would be required to maintain conductor clearance for the life of the transmission line.

Construction of about 4.4 mi of new spur roads from existing access roads to individual pole locations would be required. New roads within the project area would be short spurs, 10- to 14-ft wide except at the turns, where they would be 20-ft wide. The spur roads would be left in place for future access but would not be maintained as a cleared road. The roads would be reclaimed upon completion of construction. Western would work with the landowner or land manager to determine the appropriate reclamation. Reclamation methods could include breaking up compacted areas and reseeding with regionally native species.

Existing access roads would be used where possible. It is expected that gates would be constructed for main access roads at three to five different locations. An abandoned section of SR 299 would be used to access the proposed Weaverville Switchyard. Repairs to existing access roads would be made where necessary, and new access roads would be constructed across one stream as described above in the section on Alteration of Existing Drainage Patterns. Access road improvements and the construction of new access roads across streams could result in short-term increased sedimentation impacts in the downstream reaches of the stream. This impact would primarily occur following the first rains after rock placement occurred. It would be a short-term and localized impact that would not result in a significant change above baseline levels. No other activities would occur within the streams.

Western would implement the EPMs described above as well as applicable EPMs identified for Biological Resources (Section 3.2), Geology and Soils (Section 3.4) and Land Use (Section 3.5) on both public and private land within the project area. In addition, EPMs developed by the USFS and the BLM identified in sections 2.6.3 and 2.6.4, respectively, would be implemented in locations where the project area crossed land under their management. With implementation of the clearing specifications for vegetation removal and the EPMs, potential watershed impacts from the limited ground disturbance associated with construction of the project would be small.

The CWE analysis includes past, present, and reasonably foreseeable future projects. Western has adopted the CWE analysis conducted by the USFS in 2005 as the past and present watershed conditions for its quantitative CWE analysis. In addition, the values in parentheses in **table 3.12-1** are estimates that include the impacts from the project. These values are only very slightly higher than those for existing conditions; increases are on the order of 0.1%. These increases would not change the watershed condition class of any of the watersheds in the table, as indicated by the values for % ERA/% TOC. However, any increases in % ERA would be undesirable for any of the affected watersheds. The projected slight increases for the project, therefore, would be mitigated to the extent practicable by using measures described in section 3.12.2.2 and summarized in **table 2-2**. Cumulative watershed effects from the project described above, when added to the USFS CWE analysis as a proposed future project, would be small (an increase of ERA by 0.3%; see section 4.1.12) and would not change the existing watershed condition classes.

Reasonably foreseeable future projects on public and private lands within the HUC-7 watersheds would include the continuation of timber harvests, vehicular traffic, road construction and maintenance, recreation, urban development, and vegetation management. Projects on public lands would require some level of environmental review and approval from the land managing agency. If specific watershed issues were identified as part of the environmental process, the project proponent would need to address potential watershed impacts and the need for mitigation and/or BMPs to minimize the impacts. Depending on the agency, project proponents might be required to prepare a CWE analysis. Any future project that would include timber harvests on private lands would require the submittal of a timber harvest plan, including a CWE analysis. BMPs implemented on public and private lands would minimize the potential for cumulative watershed effects.

3.12.2.4 Impacts from the No Action Alternative

Under the no action alternative, the existing distribution line would remain in place. The existing access roads would continue to be used. The no action alternative would result in no additional impacts to water resources in the project area over current conditions.

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3.13 WILDERNESS AND RECREATION

3.13.1 Affected Environment

This section describes the recreational resources currently within the project area or those that could be affected by the project as a result of its location on or near the Whiskeytown-Shasta-Trinity NRA and/or the Trinity River.

3.13.1.1 Resource Study Area

The ROW for the project would occur across both privately owned and federally administrated lands. The main private landowner along the western portion of the ROW is SPI. The remaining lands are administrated by either USFS, BLM, or Reclamation. Several Federal jurisdictional areas manage recreational resources along the Trinity River Basin.

The project area would include ROW segments that would encompass the existing Trinity PUD 12-kV power distribution line from Trinity Power Plant to Lewiston tap and the proposed new transmission lines from Lewiston tap to Lewiston Substation and from Lewiston tap to the proposed Weaverville Switchyard. The wilderness segments and recreation resource study area includes the proposed ROW and adjacent land uses along the ROW.

3.13.1.2 Issues of Environmental Concern

Issues of environmental concern for wilderness and recreation resources include disturbance or restricted access to established recreation areas or facilities.

3.13.1.3 Characterization

Wilderness Areas

The Wilderness Act was established by Congress in 1964 to add protection to some of the most natural and undisturbed public land in America (16 U.S.C. §§ 1131–1136). The result of the act was the creation of the National Wilderness Preservation System to "secure for the American people of present and future generations the benefits of an enduring resource of wilderness" (16 U.S.C. § 1131).

The USFS manages several wilderness areas in Trinity County. These wilderness areas include the Trinity Alps, Chanchelulla, and Yolla Bolla-Middle Eel. The project would not be located within or adjacent to any established wilderness areas. The wilderness area that would be nearest to the project is the Trinity Alps; it is generally about 4 to 8 mi to the west.

National Forest and Recreation Areas

The USFS manages public lands in national forests and grasslands; these encompass 193 million acres nationwide (USFS 2006a). Most of Segment 1 of the project runs through the STNF. The STNF is made up of four separate management units: South Fork Management Unit, Shasta McCloud Management Unit, Trinity River Management Unit (TRMU), and

Whiskeytown-Shasta-Trinity NRA. Management units of the STNF are shown on **figure 3.13-1** (USFS 2006b).

Trinity River Management Unit

The TRMU includes the areas of Weaverville, Trinity/Lewiston Lake, Trinity River, and Big Bar. The TRMU offers many opportunities for recreation. There are a number of trails that offer opportunities ranging from scenic, 0.25-mi hikes to 19-mi backcountry mountain excursions through the extensive forest trail system. Mountain biking is also a popular activity within the TRMU. Several mountain bike trails are available and offer scenic vistas, such as the Trinity Alps, Trinity Divide, and Trinity Lake. The TRMU provides excellent catches of steelhead, silver salmon, and Chinook salmon in the Trinity River and native rainbow trout in tributary creeks and streams. A portion of Segment 1 is located within the TRMU.

Whiskeytown-Shasta-Trinity National Recreation Area

Congress established the Whiskeytown-Shasta-Trinity NRA on November 8, 1965 (16 U.S.C. § 4609). The Whiskeytown-Shasta-Trinity NRA is composed of 246,087 acres divided into three units: Whiskeytown is 42,500 acres; Shasta and Trinity totals 203,587 acres (USFS 2007b). Each area encompasses a large manmade lake and its surrounding terrain. This NRA is a popular destination for outdoor activities including camping, fishing, swimming, rafting, kayaking, boating/house boating, water skiing, backpacking, horseback riding, hiking, mountain biking, hunting, studying/viewing nature, driving or scenic byways, and using OHVs (USFS 2007b).

The Whiskeytown Unit is managed by the NPS and is located approximately 8 mi southeast of the project area along SR 299. The Shasta-Trinity Unit is managed by the USFS. The Shasta Unit is located about 20 mi east of the project area along Interstate 5. The Trinity Unit includes the area around Trinity and Lewiston Lakes.

The Trinity Unit contains four main subunits, two of which encompass the project: Lewiston Lake and Trinity Dam. Recreational opportunities offered by the Trinity Unit include trout fishing, boating, scenic driving, camping, and trail use. The Lewiston Lake subunit is a renowned trout fishing area, while the Trinity Dam subunit is known for its multiple types of boating opportunities. Segment 1 of the project is located within the Lewiston Lake subunit. Minor portions of Segments 2 and 3 are located within the NRA.

Recreational Opportunities

The three major lakes in Trinity County are Trinity Lake, Lewiston Lake, and Ruth Lake. The largest is Trinity Lake, which was originally named Clair Engle Lake after the senator who supported construction of Trinity Dam. Trinity Lake is the third largest lake in California. It covers approximately 16,000 acres and is about 20 mi long with an estimated 147 mi of shoreline (USFS 2006a). Lewiston Lake is located just downstream from Trinity Lake. Lewiston Lake covers approximately 610 acres, with about 15 mi of wooded shoreline (USFS 2006a). The Trinity River is the main water source for both Lewiston and Trinity Lakes. Most of the recreational resources near the project area involve water-based activities in free-flowing portions of the Trinity and Lewiston Lakes or along the Trinity River. In addition, there are a number of private and public camping and picnicking areas near the lakes. Recreational opportunities along the shores of Lewiston Lake, such as trails and camping sites, are shown on **figure 3.13-2** (USFS 2007c).

Although there are a number of recreational opportunities throughout Trinity County, the Trinity River and Trinity and Lewiston Lakes are the prime water-based recreational resources in the County, especially from May to September. Fishing for salmon, steelhead, and trout is a year-round activity at lakes and rivers throughout the county.

Other than unspecified nature trails and roadways (improved and unimproved) used for sightseeing and dispersed recreation activities (e.g., horseback riding, mountain biking, hiking, backpacking, OHV use, hunting, and gold panning in creeks), specified recreation resources along Segments 1 and 2 are limited. However, according to the USFS, the use of OHVs in the forest is increasing and has led to access and resource management problems. The OHV plan for the forest designates 239,175 acres for cross-country travel. In an additional 1,383,596 acres, OHV use is restricted to existing roads and trails because of the presence of highly erodible soils, steep terrain, critical wildlife habitat, or other resource conflicts. In addition, 500,000 acres are closed to OHV use because of their wilderness designation. Increasing attention is being focused on uncontrolled use of OHVs on forest lands and on the impacts resulting from this use. Over the next several years, STNF, as well as other national forests in California, will move toward the designation of a system of roads, trails, and specifically defined areas for OHV use that will enhance recreation opportunities, promote public safety, and protect resources.

Segment 3 contains lands owned and managed by SPI. These lands are accessible to the public but are restricted. SPI roads are maintained on a regular basis and regularly inspected by SPI foresters. SPI's land is private land; except for recreational fishing, hunting, hiking, horseback riding, and bicycling, which may be allowed, all access to it for any other purpose is strictly prohibited. Entrance to SPI lands is by walk-in, bicycle, or horseback only.

Scenic Byways

In 1990, the DOT Federal Highway Administration adopted a National Scenic Byway system. In 1992, the California State Legislature passed Assembly Bill 126, renaming SR 299 from Redding to Arcata (formerly the Trinity Highway) the Trinity Scenic Byway. Highway 3 from Weaverville to the north has also been designated as the Trinity Heritage Scenic Byway and includes the Rush Creek Road (CR 204) and Trinity Dam Boulevard (CR 105). These byways are described in further detail in Section 3.11, Visual Resources.

Wild and Scenic Rivers

On January 19, 1981, certain reaches of the Trinity River were nominated by the State of California and designated as a National Wild and Scenic River by the Secretary of the Inteiror. This classification fell under Wild, Scenic, and Recreational. Specifically, 44 mi were designated Wild; 39 mi were designated Scenic; and 120 mi were designated Recreational, totaling 203 mi. These portions were from (1) the confluence with the Klamath River to 100 yd below

Lewiston Dam, (2) the North Fork from the Trinity River confluence to the southern boundary of the Salmon-Trinity Primitive Area, (3) the South Fork from the Trinity River confluence to the California State Highway 36 bridge crossing, and (4) the New River from the Trinity River confluence to the Salmon-Trinity Primitive Area. The project falls within the portion of the river that is designated Recreational.

California designated the Trinity River as a component of California's Wild and Scenic River System in 1972 (Public Resource Code 5093.53(b)). The main stem Trinity River from 100 yards below Lewiston Dam to the confluence of Cedar Flat Creek is designated as Recreational. "Recreational rivers" are defined under Public Resource Code 5093.53(c) as "rivers or segments of rivers that are readily accessible by road or railroad, that may have some development along their shorelines and that may have undergone some impoundment of diversion in the past."

Segment 1 of the project would cross the Trinity River at two locations: below Trinity Dam, and again near Lewiston Dam below the Trinity River Fish Hatchery. These crossings would consist of conductors spanning the river to structures set well back from the banks on either side. At each of these crossing locations, existing power or communication lines already span the river.

3.13.2 Environmental Consequences

This section describes potential impacts to wilderness and recreational resources that could result from the construction, operation, and maintenance of the project.

3.13.2.1 Standards of Significance

The project would be considered to have a significant adverse impact on wilderness and recreational resources if it would:

- Preclude existing or planned dispersed recreational uses during and after construction of the transmission line or access roads or

- Alter or eliminate dedicated recreational activities during and after construction of the transmission line or access roads.

3.13.2.2 Environmental Protection Measures

The EPM for recreational use issues from **table 2-2** is as follows: Some recreational uses occurring within the existing or proposed ROW would require temporary closure or limited access. Proper signage would be posted in these areas for the duration of the closure.

Western will identify and include measures to prevent unauthorized vehicles from using ROW access roads. The measures may include gates, berms, or other approved measures. These measures will be incorporated into the Transportation Plan.

3.13.2.3 Impacts from the Proposed Action

Preclude Existing or Planned Dispersed Recreational Uses

There are no developed recreational activities or facilities, such as campgrounds, boat launches, or picnic areas, along the project ROW. However, dispersed recreation could occur on a sporadic basis at unspecified recreational areas along the ROW, such as the nature trails and roadways. These areas could be temporarily affected during expansion of the existing ROW and construction of the new ROW. Disruption of these types of recreational activities would be temporary and short term because of the relative speed at which transmission lines would be built. In addition, ground construction of Segment 1 would not affect water-based activities along the Trinity River and Lewiston Lake, because of the setback of the existing ROW from these activities. Use of helicopters during construction is discussed in further detail below.

After construction was completed, recreational users would again be able to access and use these temporarily disturbed areas in compliance with appropriate and designated land use provisions. To ensure the safety of recreational users during construction, the EPM described above would be implemented, thereby reducing this impact to less than significant.

Various existing access roads passing through the ROW would be used during construction of the project. Construction activities could temporarily limit use of these access roads or cause delays. However, impacts to access roads would also be short term in nature. Construction-related truck traffic and construction activities could temporarily delay access and degrade unimproved road conditions. These impacts are addressed in Section 3.10, Traffic and Transportation.

Construction of new access roads could lead to increased OHV use in areas not designated for this purpose. However, the need for new access roads, especially within Segments 1 and 3, would be limited by the use of existing access roads to the extent possible. Also, any new roads would be short, dead-end spurs that would not be attractive for OHV use. It is anticipated that increased OHV use resulting from the project would be less than significant. Further, the USFS is in the process of establishing designated OHV corridors on its lands, while SPI does not allow OHV use on its lands. Spur roads would not be maintained and would be allowed to revegetate. Western would implement measures identified in the Transportation Plan to further deter unauthorized use.

Construction of all segments of the project would involve helicopter flights over specified and unspecified recreation areas, which could disturb these areas. However, all helicopter flights for the project would be coordinated with the USFS in advance, so as to minimize disturbance. Approved flight paths, landing areas, and safety measures would be incorporated into the required Aviation Safety Plan. Helicopter flights would also be conducted in compliance with all FAA regulations, such as those involving altitude requirements and hours of operation.

Operation and maintenance activities for the project would generally consist of brief inspections and repairs as needed, which could temporarily preclude use of portions of the transmission line corridor. However, these disturbances would be temporary and short term. Therefore, impacts associated with the disturbance of existing or planned dispersed recreational uses would be less than significant.

Alter or Eliminate Dedicated Recreational Activities

The project would increase the size of the existing ROW between Trinity and Lewiston Dams, along the eastern side of the Trinity River, from 20 to 80 ft. Widening the existing ROW would change the visual appearance of the line in the Trinity Unit portion of the Shasta-Trinity NRA. Construction and operation of this portion of the line could impact the visual scenic character along this route if the visual intrusion of transmission line structures allowed them to be seen by recreational visitors from certain perspectives. Visual impacts associated with the expanded existing ROW, as well as the proposed ROW, are addressed in Section 3.11, Visual Resources.

Construction, operation, and maintenance activities for the project would not result in the loss of any dedicated recreational activities or facilities. Therefore, impacts associated with the alteration or elimination of these resources would be less than significant.

3.13.2.4 Impacts from the No Action Alternative

Under the no action alternative, the existing distribution line would remain in place. The existing access roads would continue to be used. The no action alternative would result in no additional impacts to established wilderness and recreation resources in the project area over current conditions.

3.14 INTENTIONAL DESTRUCTIVE ACTS

Transmission line projects may be the subject of intentional destructive acts ranging from vandalism and theft to sabotage and acts of terrorism intended to disable a line. The former, more minor, type of act is far more likely for such types of projects in general and particularly for those like the proposed action, which are in remote areas and serve relatively small populations. Intentional sabotage or terrorist acts would be expected to target much larger electrical facilities, where a loss of service would have substantial regional impacts.

Theft is most likely to involve substation and switchyard equipment that contains salvageable metal (e.g., copper and aluminum) when metal prices are high. Vandalism, on the other hand, is more likely to take place in remote areas and perhaps more likely to involve acts of opportunity (e.g., shooting out transmission line insulators) than premeditated acts.

Protections against theft include fencing around substations and the use of locks and alarm systems where expensive equipment is housed. The presence of high voltage would also discourage theft and vandalism. Vigorous prosecution of thieves and monitoring of metal recycling operations might also deter the theft of equipment. Similarly, the prosecution of vandals who have damaged or destroyed transmission line equipment might discourage vandalism if it has become a problem.

The effects of intentional destructive acts would be wide ranging, depending on the nature and location of the acts, and would be similar to outages caused by natural phenomena such as storms and ice buildup. While a line is out of service, residences lose lighting and perhaps heating or air conditioning. Electrical appliances, including electric ranges, washing machines, dryers, and refrigerators, would be lost until electrical service was restored. In such cases, perishable food could spoil, and residents would be inconvenienced and could experience discomfort during cold or hot weather. However, many area residents already have backup generators and alternate means of cooking and heating as a result of living with the frequent outages that the proposed action is designed to minimize.

Effects on commercial and industrial electricity users would similarly include loss of lighting and ventilation but could also include the shutting shut down of office equipment, computers, cash registers, elevators, heavy machinery, food preparation equipment, and refrigeration. Some commercial operations might be forced to shut down temporarily as a result of a loss of power or concerns about safety. Municipalities could be affected by the shutting down of traffic signals, while city offices might have to close temporarily. Police and fire services could be affected if communication systems shut down. City services, such as sewer and water systems, might be affected by extended outages. Loss of electrical service at hospitals would be of special concern as it could be life threatening. Such effects might be mitigated at hospitals and for other critical uses through the use of temporary backup power (e.g., from a diesel or gas-powered generator).

With respect to the proposed action, the Weaverville Switchyard would be protected from theft and vandalism by fencing and alarm systems. The presence of high voltage would also serve as a deterrent to casual attacks. However, no workers or security guards would be present at the facility. The remote location of the proposed transmission line poles and conductors would tend to reduce vandalism on the whole, because of the small number of people who would be expected to encounter the line. However, this same remoteness might encourage a rare act of opportunistic vandalism, such as someone shooting out an insulator. Such occurrences would be infrequent and would be vigorously investigated and prosecuted to discourage further acts.

The impacts from an intentional destructive act affecting the project would be similar to those from natural acts, such as storms, ice buildups, or falling trees. Repair crews would be sent to the site of the damage to restore service as soon as possible. Because crews from Western and the Trinity PUD under the proposed action would be closer than crews from PG&E under the no action alternative, impacts from intentional destructive acts would be reduced under the proposed action because repairs could be made more quickly.

In addition to the effects from loss of service, destructive acts could cause environmental effects as a result of damage to the facilities. Two such possible effects are fire ignition, should conductors be brought down, and oil spills from equipment (e.g., mineral oil in transformers) in the Weaverville Switchyard, should some of that equipment be damaged or breached. Fires would be fought in the same manner at those caused by, for example, an electrical storm. The switchyard would be designed for spill containment, and oil spills would probably be confined to the soil surrounding the electrical equipment. Any spills would be treated by removing and properly disposing of contaminated soil and replacing it with clean soil.

4.0 OTHER ENVIRONMENTAL CONSIDERATIONS

Chapter 3, Affected Environment and Environmental Consequences, presented an assessment of potential direct impacts to specific resources that could result from the project and alternatives. This chapter discusses additional environmental issues associated with the project, including:

- Cumulative impacts,
- Unavoidable adverse impacts,
- Short-term uses versus long-term productivity,
- Irreversible/irretrievable commitment of resources, and
- Growth inducement.

4.1 CUMULATIVE IMPACTS

NEPA requires the evaluation of a proposed action's potential to contribute to "cumulative" environmental impacts. A cumulative impact is defined as:

> The impact on the environment which results from the incremental impact of the action when added to other past, present, or reasonably foreseeable future actions, regardless of what agency or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. Cumulative impacts can result from similar projects or actions, as well as from projects or actions that have similar impacts (40 CFR 1508.7).

Existing conditions in the project area reflect changes based on past projects and activities. Much of the project area is rural and relatively undeveloped. However, significant changes to portions of the project area have resulted from activities related to timber production, mining, permanent dams, transportation infrastructure, electrical power generation and transmission facilities, recreational activities, Government facilities, and residential/commercial development.

Past, ongoing, or reasonably foreseeable activities within the project area include timber production, vehicle traffic (including OHVs), highway maintenance, pedestrian traffic, hunting, camping, trail use, cross country skiing, snowmobiling, river floating, or fishing. Other land uses, such as residential areas, commercial developments, vegetation management, and events, such as wildland fires, also would have a cumulative effect on resources in the project area. The major threats to forests include fire and fuels, invasive species, loss of open space, and unmanaged recreation (USFS 2006d).

Timber sales occurring throughout the STNF could also have a cumulative effect on environmental resources. Various timber sales have occurred near the project area over the last 20 years; however, these sales are generally located 0.5 mi or more from any point along the proposed transmission line. Future USFS and BLM timber sales can also be anticipated throughout the project area, and they would have a far greater contribution to cumulative impacts than would the project. Impacts from each of these sales would be separately assessed under

NEPA and also subject to a cumulative watershed impacts analysis. Continued timbering on private lands would also contribute to cumulative impacts. The NEPA assessments required on public lands and the resultant mitigation measures could serve to reduce cumulative impacts from timber production.

Other specific activities and events that might contribute to cumulative impacts follow here.

- **Trinity Substation.** The project would connect to the new Trinity Substation, which serves 21-, 60- and 230-kV transmission and distribution lines. The substation is located near Trinity Dam on Power House Road. The Trinity Substation contains the following types of electrical equipment: structural steel, conductor, three 230-kV circuit breakers, two 230-kV line terminations, four single-phase 230/60-kV transformers, and two 60-kV breakers.

- **Weaverville Airport.** For the past several years, Trinity County has been considering replacing the existing Weaverville Airport with an airport at a new location. Trinity County has experienced an increase in its recreation and tourist industries, which depend in part on aviation facilities and their related services. Trinity County has determined that the improvements needed to meet the goals and objectives of the Weaverville Airport Master Plan at the existing Weaverville Airport should not be pursued, as the site does not comply with Federal Aviation Administration (FAA) standards for obstruction clearance, runway gradient, or runway/taxiway separation for design aircraft. In addition, the existing airport is constrained by topography and surrounding land use. Twelve alternative locations were originally evaluated for the new airport site. Four existing county-owned airports were also considered as alternative sites to replace the existing Weaverville Airport. However, all four existing airport sites were rejected as not meeting the airport's goals and objectives. Of the 12 alternative airport sites, the 3 that most closely fit the new airport requirements are being evaluated for environmental consequences.

- **Trinity River Restoration Program.** The primary objective of this program is to meet Federal trust responsibilities for tribal fishery resources and restore the fisheries in the Trinity River basin to the level that existed prior to the construction of the Trinity River Division of the CVP.

The following subsections discuss potential cumulative impacts that would generally be associated with the projects described above when considered cumulatively with the various resource impacts addressed in chapter 3 of this document.

4.1.1 Air Quality

Construction of the new Trinity PUD transmission line would add to exhaust emissions and particulates during construction periods, which would be temporary and short term. As new construction would be staggered over time, dust and other emissions would be dispersed in time and location. Within the study area are many areas that are sparsely developed, especially along the corridor, and there are few sensitive receptors in the area. With mitigation to control dust and other emissions, the project would contribute little to local air quality pollution, especially in relation to the larger emission sources, such as industries and vehicle traffic on highways. Therefore, the cumulative effects on air quality are considered less than significant.

4.1.2 Biological Resources

The cumulative effects of past actions have resulted in the existing biological resource conditions described in section 3.2.1. Because of the small expanse (length and width) of the project area and the enactment of EPMs, the project would have less than significant impacts on biological resources and would have a minor incremental contribution to cumulative impacts within the project area. Other projects have been or would be subject to individual environmental review and to applicable local, State, and Federal regulations for biological resources. By incorporating the mitigation measures discussed in section 3.2 and subsequent requirements, if applicable, the project would have a less than significant contribution to cumulative impacts on biological resources within the project area. Therefore, the following subsections focus on cumulative impacts to noxious weeds and special status species or habitats within the project area.

4.1.2.1 Noxious Weeds

The project area has been disturbed by roads and ROWs that have created conditions suitable for noxious weed introduction and establishment. Construction of the project would disturb soil and create conditions favorable for noxious weeds. This situation would occur primarily within or adjacent to the 33.7 acres that would be disturbed for access spur roads, helipads, guy wire pockets, site pull areas outside the ROW, construction staging areas, the construction headquarters, and the Weaverville Switchyard. The 157 acres within the proposed ROW would be subject to minimal soil disturbance and would not contribute significantly to the creation of conditions favorable to noxious weed spread.

4.1.2.2 Northern Spotted Owl

Factors that have adversely affected northern spotted owls include habitat loss and fragmentation due to timber harvests and firs, competitive displacement from barred owls, advancing succession toward climax fir communities in the absence of fire, and changing weather patterns (Noon and Blakesley 2006). Much of the past timber harvesting likely targeted larger, older trees that were near the old-growth stage. Since the time of listing of the northern spotted owl, timber harvest has declined, and fire is now the major cause of habitat loss on Federal lands. A future threat to the northern spotted owl might include loss of habitat from sudden oak death (a canker disease caused by the non-native pathogen *Phytophthora ramorum*). West Nile virus is also a threat, but its potential magnitude and effects are unknown (Courtney et al. 2004).

ROW clearing for the project would add to the cumulative impacts to the northern spotted owl. The existing 12-kV distribution line ROW removed about 4.3 acres of northern spotted owl habitat. The proposed project ROW would impact 120.4 acres of habitat types for the northern spotted owl, which would include 35.4 acres of critical habitat (see **table 3.2-5**). No other USFS projects are planned in the project area that would remove or downgrade northern spotted owl habitat. In 1994, there were nearly 7.4 million acres of northern spotted owl habitat on Federal lands throughout the range of the species. About 156,000 acres of this habitat were lost from 1994 to 2003 (USFWS 2007a). Thus, the expected loss of habitat due to the project would be a negligible contribution to losses from other management activities on forest lands.

The foreseeable harvest cycle on private property (mostly SPI lands) within the project area would likely be well below the timeframe required to develop old-growth conditions (e.g., roughly 180 years). In addition, private lands in the area do not currently provide significant amounts of northern spotted owl habitat (particularly old-growth forests) and are not expected to provide meaningful amounts into the foreseeable future. Therefore, older coniferous forest habitats, which are limited in the project area, are mostly restricted to Federal lands. These would receive ongoing management treatments and protection into the foreseeable future, while northern spotted owl habitat would not be expected to develop on non-Federal lands in the area. Conservation of the northern spotted owl would not require continued implementation of the protections provided by the NWFP and ESA (Noon and Blakesley 2006).

4.1.2.3 Survey and Manage Plant and Wildlife Species

There would be no effects to plant and wildlife species designated as “Survey and Manage.” Protocol Survey and Manage surveys completed in 2006 did not reveal the occurrence of any these species within the project area. Because there are no populations of any Survey and Manage species within the project area, there would be no direct or indirect impacts. In the absence of direct or indirect impacts, there would be no cumulative impacts.

4.1.2.4 Threatened Fish, MIS Fish, Essential Fish Habitat, and Riparian Reserves

The watersheds and streams channels of the project area are currently in a degraded condition as a result of the cumulative effects of past management activities. Some 109 mi of anadromous fish spawning habitat have been eliminated upstream of Lewiston Dam (McEwan and Jackson 1996). Significant changes have also occurred below the dam as a result of the reduced flows and lack of flushing flows that caused an accumulation of granitic sands and the encroachment of emergent and riparian vegetation into the active channel. This situation has led to a reduction in spawning and the amount of rearing habitat for juvenile salmonids (McEwan and Jackson 1996). Overall, cumulative habitat simplification (including impacts on EFH) has reduced salmonid diversity throughout the California/Oregon region (NMFS 1997, 1999). The contribution to cumulative impacts from the project would be less than significant because no instream impacts would occur from ROW construction and because vegetation removal in riparian areas would be minimized. When combined with foreseeable actions of removing fish migration barriers and other Trinity River Restoration Program activities, slight improvements to fish habitat and fish populations might occur over the long term.

4.1.3 Cultural Resources

Cumulative effects on cultural resources are associated with construction activities and permanent land use changes resulting from human activities. The types of cumulative projects that could affect cultural resources are likely to consist of large, block area development, such as timber harvest activities or expansion of residential/commercial areas. Cultural resources tend to be concentrated and not dispersed, so loss of cultural artifacts from a linear source, such as a transmission line, is unlikely. When taken into consideration with past logging, (historic) mining, and hydroelectric projects in the study area, the development of transmission systems would contribute small impacts to cumulative effects. Further, for any development project that has a Federal nexus, Federal law requires the proponent to avoid or minimize impacts to cultural resources or to mitigate for any adverse affects that cannot be avoided. No significant cumulative impacts would result as long as each project was in compliance with applicable cultural resources regulations.

4.1.4 Geology and Soils

The project would have less than significant impacts on geology and soil resources and would not incrementally contribute to cumulative impacts to geology and soil resources within the project area. Potential geologic hazards are present throughout the region but generally have only localized potential for damage to facilities. Other development in the project area could also result in exposure of property and people to geologic hazards. Because the hazards are site-specific, the project would not have additive effects. In fact, geologic hazards pose a small risk to the project.

Cumulative impacts related to soil erosion and compaction would occur in disturbance areas shared by the project and other activities. Other projects within the project area, such as timber sales, would have a greater potential for soil erosion and compaction. Other than the cumulative projects described above, no other projects are known to be proposed in the vicinity of the project. Development of adjacent lands is unlikely on the basis of existing public land ownership and management and the surrounding environment. However, continued logging on lands throughout the project area is likely, although subject to environmental evaluation as timber sales are proposed.

It is assumed that new construction associated with other future projects would meet applicable Federal, State, and local permit requirements for erosion control and site restoration in a manner similar to that required for the project and would include appropriate mitigation measures.

Impacts to geology and soils resources in Trinity County would be determined on a project-by-project basis. Therefore, the cumulative impacts of the project would primarily be the additive effects of minor increments to existing soil erosion problems in the project area. By incorporating the mitigation measures discussed in section 3.4 and subsequent requirements if applicable, the project’s incremental contributions to the cumulative impacts on geology and soil resources are considered less than significant.

4.1.5 Land Use

Land use impacts are determined by analysis of the compatibly of the proposed use with the established land use policies. Cumulative impacts related to land use would occur if the use was not compatible with the land use policies of the area. Other than the related projects described above, no other projects are currently proposed in the vicinity of the project. As described above, development of adjacent lands is unlikely on the basis of existing land ownership and management and the surrounding environment. It is assumed that new construction associated with other future projects would meet Federal, State, and local permit requirements for land use as required for the project and would include appropriate mitigation measures. Impacts to land use in Trinity County would be determined on a project-by-project basis. Therefore, the cumulative impacts of the project would primarily be the additive effects of minor increments to land development in the county. The project's incremental contributions to the cumulative impacts on land use would be considered less than significant.

4.1.6 Noise

Construction of the project would temporarily increase the ambient noise levels along the transmission line corridor and at the proposed Weaverville Substation. These impacts would be localized and temporary but would contribute cumulatively to the existing noise environment. Potential additional cumulative impacts could occur if activities associated with future development or maintenance of existing facilities were to occur simultaneously with construction of the project. The potential for such an occurrence is low and would not be expected to result in a significant impact. In addition, project noise during operation would occur to a minimal degree and would be associated primarily with the low-frequency hum of transmission lines and substation equipment during wet or humid weather. Transmission line noise decreases quickly with distance away from the line. Given the sparsely developed nature of the corridor and the few sensitive receptors in the area, the cumulative effect of such noise would be considered less than significant.

4.1.7 Paleontological Resources

Cumulative effects on paleontological resources would be associated with construction activities and permanent land use changes from constructing the project. Because of the nature of the geology, paleontological resources in the project region are unlikely and would be minimal as indicated by a historical evaluation of the site. Federal law requires the proponent to avoid or minimize impacts to paleontological resources or to mitigate for any adverse affects that could not be avoided if such resources were found during project construction. No significant cumulative impacts would result, as long as each project complied with applicable Federal or State regulations.

4.1.8 Public Health and Safety

The project would additively increase EMF, hazardous materials, and general risks to public safety in the study corridor. People living, working, and performing recreational activities in or near the corridor could potentially be affected. However, the facility designs, clearance requirements, and other considerations would reduce these potential cumulative impacts to less than significant. The use, storage, and disposal of hazardous materials for the project would be subject to Federal, State, and local hazardous materials health and safety laws. Cumulative impacts on public health and safety would be less than significant.

4.1.9 Socioeconomics and Environmental Justice

The project would address current power transmission system inadequacies, the resolution of which would not in and of itself generate socioeconomic or environmental justice impacts. Other than the Trinity Substation, no other projects are currently proposed in the vicinity of the project; however, any future development within the federally administrated land that would be proposed would need to comply with Federal review of potential impacts to socioeconomic factors (i.e., displacement of population, changes in employment and income, change in housing or community services) and prevent disproportionate adverse impacts to minority and low-income populations. Any future projects developed within Trinity County would be subject to review by NEPA and/or CEQA and would need to address population and housing issues if identified as potentially significant. It is anticipated that there would be no cumulative socioeconomic or environmental justice impacts.

Greater reliability of electricity supply might facilitate economic and demographic growth in the area to be supplied by the transmission line, which might have socioeconomic and environmental justice impacts similar to those outlined in section 3.9. However, various other economic and demographic factors would have to be favorable in the area for additional growth to occur and produce any corresponding socioeconomic and environmental justice impacts.

4.1.10 Traffic and Transportation

Traffic and transportation impacts from the project would primarily consist of those associated with construction activities, which would be temporary and short term. Increases in project area traffic would occur as a result of construction traffic; however, because of the existing low levels of traffic volumes on area roadways, this impact would be less than significant. Although unlikely, it is possible that traffic increases associated with existing activities or future projects could coincide with construction of the project, which would result in cumulative increases in traffic within the area. Such cumulative increases would not be expected to result in reductions of the existing level of service and would be less than significant.

4.1.11 Visual Resources

Past, existing, and future development have visually altered and/or would continue to visually alter the landscape. Current effects to the visual quality of the area involve existing utility lines and associated cleared ROW, roadways, dams, and substations. Future visual effects could also involve timber sales and the possibility of forest fires. In locations where the project would be located near existing or future negative visual features, the impacts would cause an additive adverse effect. The transmission line in Segment 1 would replace the existing 12-kV distribution line. The existing line already spans the Trinity River, and the proposed new line would not introduce new visual elements. Recreationists on the river have current views of existing lines. Segments 2 and 3 would introduce a new line. The majority of Segments 2 and 3 are located in remote areas and are barely seen by motorists on nearby roadways. Portions that are visible would be screened by existing topography or vegetation or by EPMs outlined to reduce visual impacts. Both the river crossings for the project would be more visible as a result of bird diverters. The tradeoff is a reduction in bird mortality below Trinity Dam from the existing unmarked line. Locating the proposed transmission line adjacent to an existing utility corridor would typically be preferable to locating the line in a previously undisturbed landscape. The additive cumulative impacts for any alternative would not be significant, thereby resulting in a less than significant impact.

4.1.12 Water Resources

The project would not have significant impacts on water resources and would not materially contribute to cumulative impacts to water resources within the project area. (See the cumulative watershed effects analysis in section 3.12.1.3.) Cumulative impacts related to water resources would occur in disturbance areas shared by the project and other activities. Other projects within the project area would have a similar or greater potential for water resource impacts, including potential spills and contaminant discharges during construction; sediment discharges in watercourses from construction; obstruction and alteration of water courses; increased runoff; flood hazards to structures; and sedimentation from timber sales areas.

The project would slightly increase the amount of impervious surfaces, which could result in a small increase in surface runoff. The project also has the potential to degrade short- and long-term water quality and to accelerate soil erosion. Conversely, improvements to access roads designed to control ongoing erosion could reduce the total amount of erosion and sedimentation from these existing sources. Cumulative landscape alteration of other projects that might occur within the project area is expected to present a much greater potential for discharges into water courses than that associated with the project. Cumulative flooding impacts could occur if nearby projects contributed to additional runoff, resulting in an increased erosion or flood hazard. However, except for stream crossing locations, the project is not located in a 100-year flood hazard area. Other than the related projects described above, no other projects are currently proposed in the vicinity of the project. Development of adjacent lands is unlikely on the basis of the existing land ownership and management and the surrounding environment. It is assumed that new construction associated with other future projects would meet Federal, State, and local permit requirements in a manner similar to that required for the project and would include appropriate mitigation measures. Therefore, the cumulative impacts of the project would primarily be the additive effects of minor increments to existing surface runoff and water quality problems in the project area. By incorporating the mitigation measures discussed in section 3.12 and subsequent requirements if applicable, the project’s incremental contributions to the cumulative impacts on water resources in the project area would be considered less than significant.

4.1.13 Wilderness/Recreation

The project could interrupt recreational activities during construction of the transmission line ROW. However, these interruptions would be temporary and short term. The project would have less than significant impacts on wilderness/recreation resources and would not incrementally contribute to cumulative impacts to wilderness/recreation resources within the project area. It is assumed that new construction associated with other future projects would meet Federal, State, and local requirements for management of wilderness/recreation areas as required for the project and would include appropriate mitigation measures. The project's contributions to the cumulative impacts on wilderness/recreation areas would be less than significant.

4.2 UNAVOIDABLE ADVERSE IMPACTS

Unavoidable adverse impacts are defined as those impacts that could not be reduced to less than significant levels by using EPMs, other mitigation measures, or another alternative. No unavoidable adverse impacts were identified for the proposed action or no action alternative.

4.3 SHORT-TERM USES VERSUS LONG-TERM PRODUCTIVITY

This section summarizes the effects of the proposed action that would narrow the range of beneficial uses of the environment. The project would result in a long-term commitment of resources (i.e., transmission line components and land) along the length of the ROW and at the switchyard. Because most of the project would be located in sparsely settled rural areas, and because construction activities would be temporary and short term, the project would not be expected to significantly affect existing residential, commercial, and industrial land uses in the vicinity of the transmission line. Some forms of dispersed recreation might be temporarily limited during construction of the project; however, these impacts would also be temporary and short term, occurring only during the construction process. The long-term productivity of the ROW for timbering would also be reduced over the life of the project.

4.4 IRREVERSIBLE/IRRETRIEVABLE COMMITMENT OF RESOURCES

This section summarizes the effects of the project that would result in a commitment of resources and uses of the environment that could not be recovered if the project was constructed. An irreversible or irretrievable commitment of resources would occur when resources were consumed, committed, or lost as a result of the project. The commitment of a resource would be "irreversible" if the project started a process (chemical, biological, or physical) that could not be stopped. As a result, the resource or its productivity or its utility would be consumed, committed, or lost forever. Commitment of a resource would be considered "irretrievable" when the project would directly eliminate the resource, its productivity, or its utility for the life of the project.

The primary resources irreversibly or irretrievably lost include some impacts to soils, resulting from erosion of disturbed areas during construction, and modification of wildlife habitat in areas committed to facilities, including access and spur roads, pole sites, and substations. However, even though wildlife habitat areas were committed to the project, they could continue to support vegetation and wildlife.

Resources committed to the project include poles, conductors, hardware, and other items. Poles would be considered lost to the project; however, conductors and hardware are recyclable materials. Land is also committed to the project, but it is not considered lost because it would remain productive and would revert to other uses at the end of the useful life of the project.

4.5 GROWTH INDUCEMENT

A project is generally considered to be growth-inducing if it would:

- Directly or indirectly foster economic or population growth,
- Remove obstacles to growth in the area,
- Provide new employment,
- Provide access to previously inaccessible areas or extend public services to previously unserved areas,
- Tax existing community services, or
- Cause development elsewhere.

As discussed in Section 3.9, Socioeconomics and Environmental Justice, for construction activities, the project would require personnel who would likely be available from local or regional populations. It would require a minimal number of personnel to perform operational activities. As such, the project would be expected to have very limited or no effects on local populations.

The more reliable electricity supply that would be supplied by the transmission line might facilitate economic and demographic growth in the area that would be supplied by the transmission line. However, in addition to the greater reliability of the electricity supply, various other economic and demographic factors in the area would have to be favorable for additional growth to occur. Important among these factors would be the potential for economic development of the various natural, environmental, and human resources in the area and the prevailing relative cost of doing business. Given the current economic base in the area that would be supplied by the proposed line, it is unlikely that improved electricity reliability alone would contribute to significant growth in the area. Similarly, it is unlikely that other factors, combined with reliability, would produce significant additional sources of economic and demographic growth.

5.0 CONSULTATION AND COORDINATION

The following is a list of Federal, State, and local agencies and tribes contacted during the preparation of the EIS. Individual groups were contacted for background information, consultation, and general input.

5.1 FEDERAL AGENCIES

- U.S. Army Corps of Engineers
- U.S. Department of Agriculture: Forest Service
- U.S. Department of Agriculture: Natural Resources Conservation Service
- U.S. Department of Commerce: National Marine Fisheries Service
- U.S. Department of the Interior: Bureau of Land Management,
- U.S. Department of the Interior: Bureau of Reclamation
- U.S. Department of the Interior: Fish and Wildlife Service
- U.S. Environmental Protection Agency

5.2 CALIFORNIA STATE AGENCIES

- California Air Resources Board
- California Department of Fish and Game
- California Department of Transportation
- California Department of Water Resources
- California Environmental Protection Agency
- California Native American Heritage Commission
- California State Department of Parks and Recreation: State Historic Preservation Office

5.3 REGIONAL, COUNTY, AND LOCAL AGENCIES

5.3.1 Regional

- North Coast Unified Air Quality Management District
- North Coast Regional Water Quality Control Board

5.3.2 County

- Trinity County

5.3.3 Local

- City of Redding
- Community of Lewiston
- Community of Weaverville

5.4 NATIVE AMERICAN TRIBES

- Hoopa Valley Indian Reservation
- Nor-Rel-Muk Nation
- Redding Rancheria
- Wintu Educational and Cultural Council

6.0 LIST OF AGENCIES, ORGANIZATIONS, AND INDIVIDUALS RECEIVING THE TRINITY PUD DIRECT INTERCONNECTION PROJECT FINAL ENVIRONMENTAL IMPACT STATEMENT

This distribution list includes any person, organization, or agency that received the Draft EIS or submitted substantive comments on it.

6.1 FEDERAL AGENCIES

Mr. Gary Diridoi	Bureau of Land Management
Mr. Bill Kuntz	Bureau of Land Management
Mr. Chase Lentz	Bureau of Land Management
Mr. Howard Matzat	Bureau of Land Management
Dr. Eric Ritter	Bureau of Land Management
Mr. Charles Wright	Bureau of Land Management
Mr. Buford Holt	Bureau of Reclamation
Ms. Irma Lagomarisino	National Marine Fisheries Service, Arcata Area Office
Mr. Rick Rogers	National Marine Fisheries Service, Arcata Area Office
Mr. Chuck Glasgow	National Marine Fisheries Service, Southwest Region
Ms. Patricia Sanderson Port	United States Department of the Interior
Mr. Nova Blazej	United States Environmental Protection Agency
Ms. Danielle Chi	United States Fish and Wildlife Service, Red Bluff
Ms. Kristy Cottini	United States Forest Service, Shasta Lake Ranger District
Ms. Judy Fessenden	United States Forest Service, Shasta-Trinity National Forest
Mr. Robert Hawkins	United States Forest Service, Shasta-Trinity National Forest
Mr. Ralph Phipps	United States Forest Service, Shasta-Trinity National Forest
Mr. Darrel Ranken	United States Forest Service, Shasta-Trinity National Forest
Mr. S. Kelly Wolcott	United States Forest Service, Shasta-Trinity National Forest
Ms. Joyce Anderson	United States Forest Service, Weaverville Ranger District
Mr. Tom A. Quinn	United States Forest Service, Weaverville Ranger District
Mr. Dale Stanley	United States Forest Service, Weaverville Ranger District
Ms. Lisa Wrenn	United States Forest Service, Weaverville Ranger District

6.2 CALIFORNIA STATE AGENCIES

Ms. Shirley Kelly	California Highway Patrol
Ms. Sandy Hesnard	Caltrans, Divison of Aeronautics
Mr. Marcelino Gonzalez	Caltrans, District 2
Ms. Jill Nystrom	Caltrans, District 2
Mr. David Johnson	Department of Boating and Waterways
Ms. Roseanne Taylor	Department of Conservation
Ms. Brandy Norton	Department of Fish & Game
Mr. Bob Williams	Department of Fish & Game
Mr. Donald Koch	Department of Fish & Game, Region 1
Mr. Robertson Allen	Department of Forestry and Fire Protection

Mr. Wayne Donaldson	Department of Parks and Recreation, Office of Historic Preservation
Mr. Nadell Gayou	Department of Water Resources
Ms. Debbie Treadway	Native American Heritage Commission
Mr. Ken Lewis	Public Utilities Commission
Ms. Jean Sarino	State Lands Commission
CEQA Coordinator	State Clearinghouse
CEQA Coordinator	State Water Resources Control Board, Division of Water Quality

6.3 REGIONAL, COUNTY, AND LOCAL AGENCIES

	Trinity County Board of Supervisors
	Trinity County Chamber of Commerce
Mr. Lawrence D. Odle	North Coast Unified Air Quality Management District
Mr. Fred Blatt	Regional Water Quality Control Board, North Coast Region 1
Ms. Cathleen Hudson	Regional Water Quality Control Board, North Coast Region 1
Mr. John Short	Regional Water Quality Control Board, North Coast Region 1
Mr. Steve Roberts	Trinity County Building and Development Office
Mr. John Jelicich	Trinity County Planning Department
Ms. Jan Smith	Trinity County Planning Department
Mr. Rick Coleman	Trinity Public Utilities District
Mr. Andy Lethbridge	Trinity Public Utilities District
Mr. Scott Eberly	Trinity County Resource Conservation & Development Council
Ms. Coleen O'Sullivan	Trinity County Resource Conservation & Development Council
Mr. Patrick M. Frost	Trinity County Resource Conservation District
Mr. David Klipp	Trinity County Supervisor
Mr. Brandt Gutermuth	Trinity River Restoration Program

6.4 NATIVE AMERICAN TRIBES

Mr. Clifford L. Marshall	Hoopa Valley Indian Reservation
Mr. John W. Hayward	Nor-Rel-Muk Nation
Mr. Raymond Patton	Nor-Rel-Muk Nation
Ms. Tracy Edwards	Redding Rancheria
Ms. Barbara Murphy	Redding Rancheria
Mr. Robert Burns	Wintu Educational and Cultural Council
Ms. Carol Y. Bowen	

6.5 ORGANIZATIONS AND INSTITUTIONS

Mr. Jim French	National Resources Advisory Council
Mr. Greg King	North Coast Environmental Center
Mr. Richard Lorenz	Trinity County Historical Society, J.J. Jackson Memorial Museum
	Pacific Gas & Electric
	Sierra Pacific Industries

6.6 NEWS MEDIA AND LIBRARIES

Ms. Rebecca Alexander	Redding Record Searchlight
	Trinity Journal
	Trinity County Library
	Shasta County Library

6.7 INDIVIDUALS

Mr. Michael Quail
Mr. Stanton Quail

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7.0 LIST OF PREPARERS

The following is a list of staff involved in the preparation of this Final EIS.

Name	Responsibilities	Experience
Jay Abbott	Project Manager, Quality Assurance/Quality Control	*Experience:* 30 Years *Degrees:* B.A., Social and Behavioral Sciences; M.S., Resource Economics NEPA review, alternatives analysis.
Tim Allison	Socioeconomics, Land Use, Visual Resources	*Experience:* 20 Years *Degrees:* M.S., Mineral and Energy Resource Economics; M.A., Geography Specialized in regional analysis and economic analysis, including the preparation of environmental assessments and EISs.
Youngsoo Chang	Air Quality and Noise	*Experience:* 20 Years *Degrees:* B.S., M.S., and Ph.D., Chemical Engineering Areas of expertise include accidental release modeling, emission inventories, air dispersion modeling, and noise impact analyses used to prepare environmental assessments and EISs.
Eric Cowan	Graphics and GIS	*Experience:* 13 Years *Degrees:* GIS Certificate, University of Denver, 2002; Business Studies, Metropolitan State College of Denver, 1992 Extensive experience in siting and routing of linear projects, comparative analyses, permit application preparation, community leader meetings, and public involvement programs; assisted in siting and permitting transmission line projects that have involved right-of-way acquisition, corridor analysis, future construction, upgrades and rebuilds, and substation and generating facilities.
Leon Crain	Noise, Paleontological Resources, Public Health and Safety and Hazardous Materials, Traffic and Transportation	*Experience:* 36 Years *Degree:* B.S., General Engineering Extensive experience in environmental engineering involving project management and technical support dealing with a variety of environmental and safety issues; worked on or managed over 250 EIRs or EISs providing input in the areas of hazardous materials and safety, noise, traffic and transportation, hydrology and water quality, geology and soils, public health, and solid waste.
Ryan Henning	Biological Resources	*Experience:* 13 Years *Degree:* B.S., Biological Resources Multidisciplinary professional in the fields of plant and wildlife ecology, with technical experience in a variety of projects in the western United States, including baseline vegetation and wildlife data collection; wetland delineation; fish, plant, and wildlife surveys; threatened and endangered species investigations; ecological impact analysis; environmental permitting; reclamation planning; and bond release applications.

Name	Responsibilities	Experience
John Keene	Certified Project Manager, Quality Assurance/Quality Control	*Experience:* 20 Years *Degree:* B.A., Physics Project manager/regulatory specialist with extensive experience in the procedural and compliance requirements of State and Federal environmental policies.
Kirk LaGory	Program Manager	*Experience:* 31 years *Degree:* Ph.D., Zoology Technical expertise in evaluating the effects of energy developments on terrestrial, wetland, and aquatic ecology and threatened and endangered species.
Amy Meyer	Visual Resources	*Experience:* 8 Years *Degree:* B.A., Environmental Studies and Planning Environmental documents in accordance with CEQA and NEPA for land development, mines, power plants, and transmission line projects, specializing in visual resources.
Caitlin Nielsen	Production Coordinator	*Experience:* 10 Years *Degree:* A.A.S., Computer Engineer Experience with typesetting and layout design.
Dan O'Rourke	Cultural Resources, Paleontology	*Experience:* 14 Years *Degree:* M.S., Industrial Archaeology Specialized in cultural resource management and analysis of historical properties, including the preparation of environmental assessments and EISs.
Terri Patton	Geological Resources	*Experience:* 16 Years *Degree:* M.S., Geology Technical experience in evaluating geological and hydrological data for site assessments and in assessing baseline and impact scenarios involving geological and hydrological resources and land management issues throughout the United States for various EISs.
Kurt Picel	Final EIS Project Coordinator, Public Health and Safety, Traffic and Transportation	*Experience:* 28 Years *Degree:* Ph.D., Environmental Health Sciences Specialized in human and environmental health risk analysis, including the preparation of environmental assessments and EISs for transmission line and other projects; EIS project management.
Joel Reisman	Air Quality	*Experience:* 35 Years *Degrees:* M.S. and B.S., Mechanical Engineering More than 25 years of experience providing air quality services to private industry and governmental entities. Areas of expertise include project management in permitting; inventories of criteria, fugitive dust, and air toxics emissions from stationary and mobile sources; regulatory analysis and compliance; CEQA/NEPA; dispersion modeling; air quality impact studies; environmental compliance auditing and reporting; due diligence review; and health risk assessments.
Chris Russo	Graphics and GIS	*Experience:* 18 Years *Degrees:* B.F.A., Fine Arts; BA, Geography Specialist in the preparation and analyses of spatial data and in the cartographic representation of those data for large telecommunications, transmission, and remediation projects.

Name	Responsibilities	Experience
Carl Spath	Cultural Resources	*Experience:* 28 Years *Degrees:* B.A., Anthropology; M.A., Anthropology; Ph.D., Anthropology Cultural resources specialist with field experience in Latin America, the Midwest, the Northern Plains, the Rocky Mountains, the northern Great Basin, the Desert Southwest, and California. Specialties include historical archaeology, ethnohistory, environmental impact assessment, crop evolution, and *National Register of Historic Places* evaluations and nominations.
Kurtis Steinert, AICP	Land Use, Socioeconomics and Environmental Justice	*Experience:* 16 Years *Degree:* M.S. and M.S., Environmental Science; B.S., Marine Biology Broad experience in the technical preparation of NEPA/CEQA documents and extensive experience in analysis of land use and socioeconomics.
Bill Vinikour	Biological Resources	*Experience*: 30 years *Degrees*: B.A. and M.S., Biological Resources Extensive experience in NEPA analyses and environmental research to assess the impacts of linear projects (transmission lines, pipelines), power plants (nuclear, coal, wind energy), oil and gas leasing, oil shale/tar sands, military facilities, and hazardous waste sites on aquatic, terrestrial, and wetland ecosystems.
C. Ron Yuen	Water Resources	*Experience:* 21 Years *Degree:* Ph.D., Geosciences Specialized in environmental geology and hydrology, including experience in analyzing water resources, geologic resources, soils, and geologic hazards for NEPA environmental impact assessments for transmission lines, pipelines, and nuclear facilities.
Karla Whittenburg	Graphics and GIS	*Experience:* 6 Years *Degrees:* M.A., Anthropology; B.A., Anthropology Managed the GPS and GIS data collected in the field, downloaded the data from the GPS units, differentially corrected and post-processed the data, added the data to the project database, helped create the project maps, and helped with any other GIS needs related to the project.
Jeanette Winter	Assistant Project Manager, Introduction and Purpose and Need, Proposed Action and Alternatives, Geology and Soils, Water Resources, Wilderness and Recreation, Other Environmental Considerations	*Experience:* 6 Years *Degree:* B.S., Environmental Studies Experience in analyzing proposed projects for NEPA and CEQA compliance.

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9.0 GLOSSARY

A-weighted decibel (dBA)

A unit of weighted sound pressure level, measured by the use of a metering characteristic and the "A" weighting specified by the American National Standard Institute.

Advisory Council on Historic Preservation (ACHP)

The Advisory Council on Historic Preservation's mission is to promote the preservation, enhancement, and productive use of our Nation's historic resources and advise the President and Congress on National historic preservation policy.

air basin

A defined area in which airborne pollutants tend to circulate and mix.

airborne toxic control measure (ATCM)

A type of control measure, adopted by the California Air Resources Board (CARB) (Health and Safety Code section 39666 et seq.), which reduces emissions of toxic air contaminants from nonvehicular sources.

alluviation

The process of aggradation or building up of sediments by a stream along its course, or the process of covering or filling a surface with alluvium (as on a floodplain, on a delta, or at the base of a mountain).

alluvium

Clay, silt, sand, gravel, or other particulate material that has been deposited by a stream or other body of water.

alternating current (AC)

An electric current or voltage that reverses the direction of flow periodically, as contrasted with direct current, and has alternately positive and negative values. Most electricity used in the United States today is alternating current at 60 Hertz (Hz), or 60 cycles per second.

aluminum conductor steel-reinforced (ACSR)

This type of conductor has aluminum strands wrapped around a stranded steel core. The steel "reinforces" the conductor because it is much stronger.

ambient air quality

The normal or average prevailing quality of the surrounding air in a given area in terms of the type and amounts of various air pollutants present.

American Indian Religious Freedom Act (AIRFA)

A 1978 U.S. Federal law and a joint resolution of Congress that pledged to protect and preserve the traditional religious rights of American Indians, Eskimos, Aleuts, and Native Hawaiians (42 U.S.C. § 1996).

amphibolite

Rock consisting mainly of amphibole (ferromagnesian silicate minerals) and plagioclase with little or no quartz

Archaeological Resources Protection Act (ARPA)

A 1979 Federal law that prohibits the removal, sale, receipt, and interstate transportation of archaeological resources obtained illegally (without permits), from Federal or Indian lands and authorizes agency permit procedures for investigations of archaeological resources on lands under the agency's control (16 U.S.C. §§ 470aa–mm).

Area of Potential Effects (APE)

For cultural resources, the geographic area or areas within which an undertaking (project) may directly or indirectly cause alterations in the character or use of properties eligible for the *National Register of Historic Places* (NRHP).

attainment area

A geographic region where the concentration of a criteria air pollutant does not exceed National Ambient Air Quality Standards (NAAQS).

bathyal zone

Marine ecologic zone extending down from the edge of the continental shelf to the depth at which the water temperature is 4°C (39°F). Both of these limits are variable, but the bathyal zone is generally described as lying between 200 and 2,000 meters (660 and 6,600 feet) below the surface.

best management practice (BMP)

A general action found through practice to be effective in minimizing environmental impact, and committed to as mitigation to offset the impacts of the proposed action.

brush disposal (BD)

Effective management of logging debris that accumulates during the course of timber operations.

Bureau of Land Management (BLM)

The bureau within the U.S. Department of the Interior (DOI) responsible for managing public lands, including resources such as timber, minerals, oil, gas, geothermal energy, wildlife habitat, endangered species, recreational and cultural values, and open space.

Bureau of Reclamation (Reclamation)

The bureau within the U.S. Department of the Interior (DOI) responsible for operating and maintaining dams and numerous water resource projects in the western United States, including the Central Valley Project (CVP), for purposes such as irrigation and power production.

C-weighted decibel (dBC)

A frequency-weighted decibel scale that correlates well with the physical vibration response of buildings and other structures to airborne sound.

cable

A conductor with insulation (single conductor cable) or a combination of conductors insulated from one another (multiconductor cable). Cables up to 115 kV usually have solid-type insulation. Often buried, as opposed to overhead conductors.

California Ambient Air Quality Standards (CAAQS)

Standards set by the State of California for the maximum levels of air pollutants that can exist in the outdoor air without unacceptable effects on human health or the public welfare. These are more stringent than the National Ambient Air Quality Standards (NAAQS).

California Clean Air Act (CCAA)

The amendments to the California Health and Safety Code resulting from the passage of Assembly Bill 2595 constitute the CCAA. The CCCA is a California law passed in 1988 that provides the basis for air quality planning and regulation independent of Federal regulations. A major element of the Act is the requirement that local Air Pollution Control Districts (APCDs) in violation of State ambient air quality standards must prepare attainment plans that identify air quality problems, causes, trends, and actions to be taken to attain and maintain California's air quality standards by the earliest practicable date.

California Department of Fish and Game (CDFG)

The department that manages California's diverse fish, wildlife, and plant resources, and the habitats upon which they depend, for their ecological values and for their use and enjoyment by the public.

California Department of Transportation (Caltrans)

Caltrans is responsible for the design, construction, maintenance, and operation of the California State Highway System, as well as that portion of the Interstate Highway System within the State's boundaries. Alone and in partnership with Amtrak, Caltrans is also involved in the support of intercity passenger rail service in California and is a leader in promoting the use of alternative modes of transportation. The current framework of Caltrans was set down by Assembly Bill 69 in 1972.

California Department of Water Resources (CDWR)

The CDWR operates and maintains the State water project, including the California Aqueduct. The CDWR also provides dam safety and flood control services, assists water control districts in water management and conservation activities, promotes recreational opportunities, and plans for future Statewide water needs.

California Environmental Quality Act (CEQA)

There are nine Regional Water Quality Control Boards (RWQCBs) that develop and enforce water quality objectives and implementation plans that will best protect the beneficial uses of the State's waters, recognizing local differences in climate, topography, geology, and hydrology. Each RWQCB has nine part-time members also appointed by the Governor and confirmed by the Senate. RWQCBs develop "basin plans" for their hydrologic areas, govern requirements, issue waste discharge permits, take enforcement action against violators, and monitor water quality. The task of protecting and enforcing the many uses of water, including the needs of industry, agriculture, municipal districts, and the environment is an ongoing challenge for the State Water Resources Control Board (SWRCB) and RWQCBs. The CEQA is the principal California statute that requires State and local agencies to identify the significant environmental impacts of their actions and to avoid or mitigate those impacts, if feasible.

carbon monoxide (CO)

A colorless, odorless gas that is the product of incomplete combustion when natural gas, oil, wood, coal, or other materials rich in carbon are burned. Carbon monoxide interferes with the delivery of oxygen throughout the body.

Census-Designated Place (CDP)

A geographic entity that serves as the statistical counterpart of an incorporated place for the purpose of presenting census data for an area with a concentration of population, housing, and commercial structures that is identifiable by name but is not within an incorporated place. CDPs usually are delineated cooperatively with State, Puerto Rico, Island Area, local, and tribal officials on the basis of U.S. Census Bureau guidelines. For the 2000 Census, for the first time, CDPs did not need to meet a minimum population threshold to qualify for the tabulation of census data.

Central Valley Project (CVP)

The multipurpose Federal reclamation project authorized by Congress under the Central Valley Project Act, 50 Stat. 844, 850 (1937), as amended. The CVP generally runs from the Cascade Mountain Range in northern California to the plains along the Kern River, south of the City of Bakersfield. For the Trinity Public Utilities District (PUD) project, the notable amendment is the Trinity River Division Act of the CVP Act, 69 Stat. 719 (1955).

circuit

A system of conductors through which an electric current is intended to flow; sometimes normally open paths that do not ordinarily conduct in a network can also be considered part of a circuit.

Clean Air Act (CAA)

A 1963 Federal law, amended several times since, giving the Federal Government powers to limit air pollution (Public Law 88-206, 42 U.S.C. §§ 7401–7671, as amended). The term also loosely applies to the Air Quality Act of 1967, which gave the Federal Government a stronger regulatory role. An especially important effect was the development of standards based on concentrations of pollutants in air.

Clean Water Act (CWA)

A Federal law (Public Law 95-217, 33 U.S.C. §§ 1251–1387) intended to restore and maintain the chemical, physical, and biological integrity of the Nation's waters and secure water quality that provides for the protection and propagation of fish, shellfish, and wildlife, as well as for recreation in and on the water.

***Code of Federal Regulations* (CFR)**

Codification of the general and permanent rules and regulations published in the *Federal Register* by the executive departments and agencies of the Federal Government of the United States.

colluvium

A general term applied to any loose, heterogeneous, and incoherent mass of soil material and/or rock fragments deposited by rainwash, sheetwash, or slow continuous downslope creep, usually collecting at the base of mountains, gentle slopes, or hillsides. The depositional process is called colluviation.

community noise equivalent level (CNEL)

A 24-hour, time-weighted, annual average noise level.

conductor

(1) Any metallic material, usually in the form of wire, cable, or bar, suitable for carrying an electric current. (2) The wire cable strung between transmission towers.

contaminant

Any substance or matter that has an adverse effect on air, water, or soil. Also see *pollutant.*

corona

A luminous electrical discharge due to the ionization of the air surrounding a conductor caused by a voltage gradient exceeding a certain critical value. Can be seen as bluish tufts or streamers surrounding the conductor or conductor hardware; generally a hissing sound can be heard. Transmission-line corona varies with atmospheric conditions and is more intense during wet weather.

corridor

A strip of land, 0.5-mile wide or more, forming a passageway for transportation or utility facilities. Also see *right-of-way*.

Council on Environmental Quality (CEQ)

Division of the White House that coordinates Federal environmental efforts in the United States and works closely with agencies and other White House offices in the development of environmental policies and initiatives; established by Congress as part of the National Environmental Policy Act (NEPA) of 1969 (established under Public Law 91-190, 42 U.S.C. §§ 4321–4347, January 1, 1970, as amended).

cultural resources

Included but are not limited to archaeological materials (artifacts) and sites dating to prehistoric, historic, and ethnohistoric periods that are located on the ground surface or are buried beneath it; natural resources, sacred objects, and sacred sites that have importance for American Indian peoples; resources that the American Indian nations regard as supportive to their cultural and traditional lifeways.

current

(1) In common usage, the flow of electric energy when an appliance or machine is turned on. (2) In a technical sense, a term usually modified by an adjective, such as direct current, referring to the rate of electrical charge flowing through a conductor or circuit as compared with voltage (volts), which is the force or pressure that causes the current to flow; current and ampere are often used interchangeably.

decibel (dB)

(1) A unit used to describe the strength or intensity of wave-propagated phenomena such as sound or transmitted signals. Technically, a logarithmic scale is used. (2) One dB equals the least sound level detectable by the human ear, while 70 dB is equivalent to busy traffic, and 150 dB is equal to a nearby jet taking off.

Department of Energy (DOE)

See U.S. Department of Energy.

Department of Transportation (DOT)

See U.S. Department of Transportation.

diesel particulate matter (DPM)

That portion of the exhaust from a diesel-fueled compression ignition engine that is collected via a particulate matter sampling method. DPM consists of several constituents, including an elemental carbon fraction, a soluble organic fraction, and a sulfate fraction. The majority of DPM (i.e., 98%) is smaller than 10 micrometers (μm) in diameter.

direct current (DC)

Nonalternating constant flow of current in the single direction.

disposal

Final placement or destruction of hazardous materials—toxic, radioactive, or other wastes; pesticides or other chemicals; and polluted soils at federally approved sites.

distribution

The transport of electricity at subtransmission voltages to ultimate use points, such as homes and businesses, from a utility.

easement

The right, privilege, or interest obtained by Western through negotiated contract or condemnation to construct, maintain, and operate transmission facilities within a right-of-way.

electric and magnetic fields (EMF)

Fields of force caused by electric voltage and current around the electric wire or conductor when an electric transmission line or any electrical wiring is in operation. Magnetic fields exist only when current is flowing. Electric fields are present in electrical appliances and cords whenever they are plugged in.

Electric Power Research Institute (EPRI)

A nonprofit agency organized by the electric utility industry to manage and coordinate industry-sponsored research activities.

electricity

(1) The common term used for electric power and for electric energy (power designates the total electricity delivered, and energy designates what is delivered over time). (2) A flow of electrons along a conductor and/or a waveform component of the electromagnetic spectrum.

electromagnetic

Of or pertaining to the magnetic forces produced in a surrounding medium by the flow of current in a conductor, as used in this document, meaning electric and magnetic fields.

endangered species

Under the Endangered Species Act (ESA), animals, birds, fish, plants, or other living organisms whose existence is determined to be in danger throughout all or a significant portion of their range because their habitat is threatened with destruction, drastic modification, or severe curtailment or because of overexploitation, disease, predation, or other factors (16 U.S.C. §§ 1531–1544).

Endangered Species Act (ESA)

The Endangered Species Act of 1973 protects animal and plant species currently in danger of extinction (endangered) and those that may become endangered in the foreseeable future (threatened). It requires the conservation of ecosystems upon which threatened and endangered species of fish, wildlife, and plants depend, both through Federal action and by encouraging the establishment of State programs (Public Law 93-205, 16 U.S.C. §§ 1531–1544).

environmental impact statement (EIS)

A document that examines the possible environmental effects of a Federal agency's proposed actions required under the National Environmental Protection Act (NEPA) for all major Federal actions. A tool for decision making, it describes the positive and negative effects of proposed actions and lists alternative actions.

environmental justice (EJ)

Requirement established by Executive Order (EO) 12898, February 11, 1994, to identify and address disproportionately high and adverse human health or environmental effects on minority and/or low-income populations.

Environmental Protection Agency (EPA)

See U.S. Environmental Protection Agency.

environmental protection measure (EPM)

A specific action identified to reduce anticipated impacts of a given activity.

environmental site assessment (ESA)

Evaluation of a parcel of real estate to document the "recognized environmental conditions," or the presence or likely presence of any hazardous substances on a property under conditions that indicate an existing release, a past release, or a material threat of a release of the substance(s) into structures on the property, or into the ground, groundwater, or surface water of the property.

equivalent sound pressure level (L_{eq})

L_{eq} is the equivalent sound level that corresponds to a steady-State sound level containing the same total energy as a time-varying signal over a given sample period. L_{eq} is the "energy" average noise level during the time period of the sample. L_{eq} can be measured for any time period but is typically measured for 15 minutes, 1 hour, or 24 hours.

erosion

(1) The wearing away of land surface by wind or water that occurs naturally from weather or runoff but can be intensified by land-clearing practices related to such activities as farming, residential or industrial development, road building, or timber-cutting. (2) A material wear mechanism resulting from suspended particles in a flow stream of water or other fluid.

Executive Order (EO)

Edict issued by the president as head of the executive branch of the Federal Government. It is essentially a governing regulation for Federal agencies with or without a formal or informal rule-making process.

extremely low frequency (ELF)

Band of radio frequencies from 3 to 30 Hz.

Fahrenheit (F)

Temperature scale named after the German physicist Daniel Gabriel Fahrenheit.

Federal Aviation Administration (FAA)

The FAA is primarily responsible for the advancement, safety, and regulation of civil aviation, and oversight of the air traffic control system.

Federal Emergency Management Agency (FEMA)

The Federal Emergency Management Agency is responsible for identifying and mitigating natural and man-made hazards, and responding to emergencies when they do occur. The agency prepares maps delineating floodplains along water courses as one of its functions.

***Federal Register* (FR)**

Publication of the U.S. Government that contains most routine publications and public notices of U.S. Government agencies; published daily (M–F), and provides notice to the public of a Federal Government agency's proposed new rules, or changes to existing rules.

fine particulate matter ($PM_{2.5}$)

A major air pollutant consisting of tiny solid or liquid particles, generally soot and aerosols. The size of the particles (mean aerodynamic diameter of 2.5 micrometers [μm] or less, about 0.0001 in. or less) allows them to easily enter the air sacs deep in the lungs where they may cause adverse health effects, as noted in several recent studies. $PM_{2.5}$ also reduces visibility but is not considered a criteria air pollutant at this time.

floodplain

The lowlands adjoining inland and coastal waters. A relatively flat and flood-prone area.

gauss (G)

A unit used to measure magnetic field strength. The intensity of the earth's magnetic field, near the surface of the earth, is on the order of one-half gauss.

General Land Office (GLO)

A U.S. agency created in 1812 to take charge of "all such acts and things touching or respecting the public lands of the U.S.," which included the surveying of the public lands. On July 16, 1946, the Bureau of Land Management (BLM) was established in the Department of Interior. Under that plan, the GLO was abolished and its functions were transferred to the BLM. The office of the U.S. Supervisor of Surveys, together with the field surveying services known as Cadastral Engineering Service, was abolished and the functions were transferred to the Secretary of the Interior. In July 1946, the Secretary of the Interior ordered that the functions and powers of the GLO, and the U.S. Supervisor of Surveys, together with the Field Surveying Service, be exercised by the Director of the BLM and subject to the direction and control of the Secretary.

generation

The process of producing electricity from hydro, coal-fired, or nuclear steam turbines, or photovoltaic conversion systems.

generator

In a power plant, the machine that produces electrical energy. The term is also applied to a utility that owns or acquires the output of a generating resource.

granodiorite

A coarse-grained plutonic rock with a composition intermediate between quartz diorite and quartz monzonite.

habitat

The place where a population (human, animal, plant, or microorganism) lives and its surroundings, both living and nonliving.

hazardous waste

The by-products of society that can pose a substantial or potential hazard to human health or the environment when improperly managed. Possesses at least one of the following characteristics: ignitability, corrosivity, reactivity, or toxicity. Also see *Resource Conservation and Recovery Act*.

hertz (Hz)

The unit of measurement of frequency, equivalent to one cycle per second and symbolized by Hz.

hydrologic region (HR)

A study area, consisting of one or more planning subareas, that has a common hydrologic character.

impact

Direct or indirect changes in the existing environment, whether beneficial or adverse, resulting from a specific act or series of acts.

insulator

A device, made of nonconducting material, used to give support to electrical conductors and shield them from ground or other conductors. An insulator inhibits the flow of current from the conductor to the earth or another conductor.

invasive plants

These plants are not part of (if exotic), or are a minor component of (if native), the original plant community or communities that have the potential to become a dominant or co-dominant species on the site if their future establishment and growth are not actively controlled by management interventions, or are classified as exotic or noxious plants under State or Federal law. Species that become dominant for only one to several years (e.g., as a short-term response to drought or wildfire) are not invasive plants.

key observation point (KOP)

Critical viewpoint that is usually along commonly traveled routes or at other likely observation overlooks.

kilovolt (kV)

Measure of voltage carried by a power line or conductor. One kilovolt equals 1,000 volts.

kilowatt (kW)

One kilowatt equals 1,000 watts.

level of service (LOS)

(1) A qualitative assessment of a road's operating conditions. For local government comprehensive planning purposes, level of service means an indicator of the extent or degree of service provided by, or proposed to be provided by, a facility based on and related to the operational characteristics of the facility. Level of service indicates the capacity per unit of demand for each public facility. (2) This term refers to a standard measurement used by transportation officials that reflects the relative ease of traffic flow on a scale of A to F, with free-flow being rated LOS A and congested conditions rated as LOS F.

mafic

An igneous rock composed chiefly of one or more ferromagnesian, dark-colored minerals.

magnetic field

The invisible lines of magnetic force produced by electric current flowing in a conductor, such as a transmission line, service wires in a house, or household appliances. Measured in terms of lines of force per unit area with the measurement unit being tesla (T) or gauss (G) (1 T equals 10,000 G). Also see *electric and magnetic fields.*

mass wasting

General term for the dislodgement and downslope transport of soil and rock material under gravity.

Materials Safety Data Sheets (MSDSs)

Product safety information sheets prepared by manufacturers and marketers of products containing toxic chemicals. These sheets can be obtained by requesting them from the manufacturer or marketer. Some stores, such as hardware stores, may have MSDSs on hand for products they sell.

maximum sound level (L_{max})

A standard weighting of the audible frequencies designed to reflect the response of the human ear to noise.

mitigate

In environmental usage, to either reduce or avoid an adverse environmental effect through various measures that seek to make the effect less severe, less obvious, or more acceptable.

National Ambient Air Quality Standards (NAAQS)

Air quality standards established by the Clean Air Act (CAA) of 1970 (42 U.S.C. §§ 7401–7671). Primary NAAQS are intended to protect public health with an adequate margin of safety. Secondary NAAQS are intended to protect the public welfare from any known or anticipated adverse effects of a pollutant.

National Environmental Policy Act (NEPA)

A Federal law that requires evaluation of the environmental impact of federally funded projects and programs. Generally requires that an environmental assessment (EA) and/or an environmental impact statement (EIS) be prepared by a Federal agency before a project can begin (42 U.S.C. §§ 4321–4370).

National Historic Preservation Act (NHPA)

The National Historic Preservation Act establishes historic preservation as a national policy and defines it as the protection, rehabilitation, restoration, and reconstruction of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, or engineering. The amendments of 1980 establish guidelines for nationally significant properties, curation of artifacts, data documentation of historic properties, and preservation of federally owned historic sites. They also require the designation of a Federal Historic Preservation Officer in each Federal agency, who authorizes the inclusion of historic preservation costs in project planning costs and authorizes the withholding of sensitive data on historic properties when necessary. Section 106 of the NHPA provides direction for Federal agencies on undertakings that affect properties listed, or those eligible for listing on the *National Register of Historic Places* (NRHP) and is implemented by regulations (36 CFR part 800) issued by the Advisory Council on Historic Preservation (ACHP). Section 110 requires that Federal agencies locate, inventory, and nominate all properties that may qualify for the NRHP. Applicable regulations are 36 CFR part 60, “National Register of Historic Places”; 36 CFR part 63, “Determination for Eligibility for Inclusion in the National Register of Historic Places”; and 36 CFR part 800, “Protection of Historic Properties.” Regulations at 36 CFR part 78 provide a waiver of responsibility for Federal agencies of the requirement of the NHPA of 1966 in the event of a major natural disaster or imminent threat to national security (16 U.S.C. § 470).

National Marine Fisheries Service (NMFS)

An agency of the U.S. Department of Commerce that oversees ocean and river fish harvest limits and determines which stocks are to be listed as endangered or threatened under the Endangered Species Act (ESA).

National Park Service (NPS)

The NPS manages nearly 400 National Parks to preserve, protect, and share the history of this land and its people. It also is a part of a National Preservation partnership working with tribes, States, local governments, nonprofit organizations, historic property owners, and others to protect our shared heritage.

National Pollutant Discharge Elimination System (NPDES)

A provision of the Clean Water Act (33 U.S.C. § 1251–1387) that prohibits discharge of pollutants into waters of the United States unless a special permit is issued by the EPA, a State, or (where delegated) a tribal government on an Indian reservation. Specifically, see 33 U.S.C. § 1342.

National Recreation Area (NRA)

An NRA is an area designated by Congress to assure the conservation and protection of natural, scenic, historic, pastoral, and fish and wildlife values and to provide for the enhancement of recreational values. To be designated as an NRA, an area must meet all of the following criteria:

- The area must be spacious, contain outstanding natural and/or cultural features, and provide significant recreational opportunities;
- The area must be located to withstand comparatively heavy recreation use and located where it can contribute significantly to the recreation needs of urban populations;
- The area must provide recreational opportunities to assure national as well as regional visitation;
- The scale of investment, development, and operational responsibility must be sufficiently high to require direct Federal involvement or substantial Federal participation to assure optimum public benefit; and
- An NRA may be managed by any Federal agency with land management responsibilities.

***National Register of Historic Places* (NRHP)**

A list of architectural, historical, archaeological, and cultural sites of local, State, or national significance, established by the Historic Preservation Act of 1966 and maintained by the National Park Service. Sites are nominated to the NRHP by State or Federal agencies.

Native American Graves Protection and Repatriation Act (NAGPRA)

This Act requires Federal agencies to establish Native procedures for identifying Native American groups associated with cultural items on Federal lands, to inventory human remains and associated funerary objects in Federal possession, and to return such items upon request to the affiliated groups. The law also requires that any discoveries of cultural items covered by the Act shall be reported to the head of the Federal entity that shall notify the appropriate Native American tribe or organization and cease activity in the area of the discovery for at least 30 days (25 U.S.C. §§ 3001–3013).

Native American Heritage Commission (NAHC)

Public Resource Code § 5097.9 established the nine-member NAHC. The NAHC is a State commission mandated to preserve and enhance Native American heritage and protect Native American resources in California.

native species

These species historically occurred or currently occur in a particular ecosystem and were not introduced.

nitrogen dioxide (NO_2)

A reddish-brown gas that forms during high temperatures of combustion. It is toxic at high concentrations and reacts with moisture in the air to form nitric acid, which is highly corrosive to metals. It is a key ingredient in the formation of photochemical smog and acid rain.

nonattainment area

A geographic area that does not meet one or more of the National Ambient Air Quality Standards (NAAQS).

North Coast Air Basin (NCAB)

The NCAB encompasses Del Norte, Humboldt, and Trinity Counties, in addition to Mendocino and northern Sonoma Counties (each of which composes a separate air district within the basin).

North Coast Regional Water Quality Control Board (NCRWQCB)

The NCRWQCB is responsible for the region that encompasses the project. See also Regional Water Quality Control Board (RWQCB).

Notice of Availability (NOA)

A formal public notice under NEPA announcing the availability of a completed environmental assessment (EA), draft environmental impact statement (EIS), or final EIS. Such notice is to be published in local newspapers. For an EIS, publication of such notice in the *Federal Register* is also required.

Notice of Intent (NOI)

A notice that an environmental impact statement (EIS) will be prepared and considered. The NOI is published in the *Federal Register* by the lead Federal agency. The California Environmental Quality Act (CEQA) equivalent of this notice is called the Notice of Preparation.

noxious weeds

These are designated by Federal or State law as generally possessing one or more of the following characteristics: aggressive and difficult to manage; parasitic; a carrier or host of serious insects or disease; or non-native, new, or not common to the United States.

off-highway vehicle (OHV)

A motorized vehicle that is capable of being operated off of improved and regularly maintained roads with hardened or gravel surfaces.

ophiolitic

The association of ultramafic rocks, coarse-grained gabbro, coarse-grained diabase, volcanic rocks, and radiolarian chert.

outage

In a power system, a period — scheduled or unexpected — during which the transmission or distribution of power stops or a particular power-producing facility ceases to provide generation, resulting in an interruption in delivery of electricity to consumers.

particulates

Airborne particles, including dust, smoke, fumes, mist, spray, and aerosols. Also see *pollutant.*

parts per billion by volume (ppbv)

A measure of the amount of one substance in a second, which is the carrier.

parts per million by volume (ppmv)

A measure of the amount of one substance found in a carrier.

peak ground acceleration (PGA)

The largest acceleration recorded by a particular station during an earthquake.

personal protective equipment (PPE)

Equipment and clothing that are worn to protect against or minimize workplace risks.

pollutant

A contaminant, such as sulfur dioxide, nitrous oxide, hydrocarbons, radionuclides, carbon monoxide, and lead, present in a concentration high enough to cause adverse effects to health or the environment.

pollution

The accumulation of wastes or by-products of human or natural activity that occurs when wastes or by-products are discharged faster than they can degrade, assimilate, or disperse by natural processes.

pluton

An intrusive igneous rock formed at great depth.

Public Law (P.L.)

A public bill or joint resolution that has passed both chambers and been enacted into law. Public laws have general applicability nationwide.

pyroclastic

Clastic rock material formed by volcanic explosion or aerial expulsion from a volcanic vent, also pertaining to rock texture of explosive origin.

Record of Decision (ROD)

The document notifying the public of a decision taken by a Federal agency on a proposed action, together with the reasons for the choices entering into that decision.

Recreation Opportunity Spectrum (ROS)

A system for planning and managing recreation resources that categorizes recreation opportunities into three classes: semiprimitive, roaded natural, and rural.

Regional Water Quality Control Board (RWQCB)

There are nine RWQCBs that develop and enforce water quality objectives and implementation plans that will best protect the beneficial uses of the State's waters, recognizing local differences in climate, topography, geology, and hydrology. Each RWQCB has nine part-time Members also appointed by the Governor and confirmed by the Senate. RWQCBs develop "basin plans" for their hydrologic areas, govern requirements, issue waste discharge permits, take enforcement action against violators, and monitor water quality. The task of protecting and enforcing the many uses of water, including the needs of industry, agriculture, municipal districts, and the environment is an ongoing challenge for the State Water Resources Control Board (SWRCB) and RWQCBs.

reliability

(1) The measure of the ability of a power system to provide uninterrupted service, even while that system is under stress. (2) In a relay or relay system, a measure of the degree of certainty of correct performance. Denotes certainty of correct operation, together with assurance against incorrect operation from all extraneous causes.

Resource Conservation and Recovery Act (RCRA)

RCRA of 1976 regulates the storage, treatment, and disposal of hazardous and nonhazardous wastes.

Resource Management Plan (RMP)

A land use plan as described by the Federal Land Policy and Management Act (FLPMA).

respirable particulate matter (PM_{10})

Particulate matter with a mean aerodynamic diameter of 10 micrometers (μm) or less. PM_{10} is one of six criteria air pollutants specified under Title I of the Clean Air Act (CAA).

right-of-way (ROW)

An easement for a certain purpose over the land of another, such as the strip of land used for a road, electric transmission line, ditch, or pipeline. Utilities usually acquire easements for transmission lines, roads, and other facilities such as guys and anchors.

Road ROWs are usually acquired in 20- or 50-ft widths; for 60-kV transmission lines, the width of the ROW would be 80 ft.

rotational landsliding

Type of slide that moves as a coherent or semicoherent mass along a concave, moderate to deeply lying failure plane. The slide is not restricted to the zone of weathering and can have deeply lying failure planes.

schist

A strongly foliated crystalline rock, formed by dynamic metamorphism, that can be readily split into thin flakes or slabs as a result of the well-developed parallelism of more than 50% of the minerals present.

scoping

For an environmental impact statement (EIS), the process of defining the range of issues requiring examination in studying the likely environmental effects of a proposed action, generally including public consultation with interested individuals and groups, as well as with tribes, State and local agencies, and landowners.

Sierra Nevada Region (SNR)

One of four regions of the Western Area Power Administration. SNR sells power generated from the Central Valley Project (CVP) and the Washoe Project in northern and central California and portions of Nevada to wholesale customers, such as towns; rural electric cooperatives; public utility and irrigation districts; Federal, State, and military agencies; Native American tribes; investor-owned utilities; and power marketers. Bureau of Reclamation customers own and operate miles of high-voltage transmission lines and substations to deliver this power to customers.

Sierra Pacific Industries (SPI)

A third-generation-family-owned and -operated forest products company located in Redding, California.

single-circuit

One complete electrical circuit that consists of three separate conductors or phases.

State Historic Preservation Officer (SHPO)

The person who has been designated in each State to administer the State Historic Preservation Program, including identifying and nominating eligible properties to the *National Register of Historic Places* (NRHP) and otherwise administering applications for listing historic properties in the NRHP. In accordance with the National Historic Preservation Act (NHPA), SHPOs advise and assist Federal agencies in carrying out their section 106 responsibilities.

State Implementation Plan (SIP)

State plans approved by the U.S. Environmental Protection Agency (EPA) for establishing, regulating, and enforcing air pollution standards.

State Route (SR)

A road numbered by the State, falling below numbered national highways (like U.S. Routes) in the hierarchy.

State Water Resources Control Board (SWRCB)

The State Water Resources Control Board (SWRCB) is a California State agency created in 1967 to ensure the highest reasonable quality for waters of the State, while allocating those waters to achieve the optimum balance of beneficial uses. The joint authority of water allocation and water quality protection enables the SWRCB to provide comprehensive protection for California's waters.

Stormwater Pollution Prevention (SWPP) Plan

In compliance with the State General Permit, the SWPP plan is a document that identifies sources and activities at a particular facility that may contribute pollutants to stormwater and commits the operator to specific control measures and time frames to prevent or treat such pollutants.

sulfur dioxide (SO_2)

One of the gases composed of sulfur and oxygen produced by the combustion of fuels containing sulfur and a key ingredient in the formation of smog and acid rain.

surface water

(1) All water naturally open to the atmosphere, such as rivers, lakes, reservoirs, streams, impoundments, seas, and estuaries. (2) Refers to all springs, wells, or other collectors, which are directly influenced by surface water.

thermal rating

The temperature that can be withstood by an object without losing structural or functional integrity.

threatened species

As defined in the Endangered Species Act (ESA), those species likely to become endangered within the foreseeable future throughout all or a significant portion of their range.

Timber Production Zone (TPZ)

In 1976, the California Legislature passed the Z'berg-Warren-Keene-Collier Forest Taxation Reform Act (AB 1258) to preserve commercial timberland and lessen pressures for conversion by changing the method of timberland taxation. The AB 1258 required the county to establish zoning districts within which only timber harvesting, the production of forest products, and compatible uses are permitted and within which taxes levied against the land are based on the timber yield rather than on the value of standing timber.

traditional cultural property (TCP)

A property that is eligible for inclusion on the *National Register of Historic Places* (NRHP) because of its association with cultural practices or beliefs of a living community that is important in maintaining the continuing cultural identity of the Native American community.

transformer

A device for transferring electrical energy from one circuit to another by magnetic induction, usually between circuits of different voltages. Consists of a magnetic core on which there are two or more windings. In power systems, most frequently used for changing voltage levels.

transmission

The bulk transport of electricity from large generation centers over significant distances to interchanges with large industries and distribution networks of utilities.

transmission line

A high-voltage, extra-high-voltage, or ultra-high-voltage power line used to carry electric power efficiently over long distances.

ultramafic

Igneous rocks composed predominantly of mafic minerals.

undesirable plants

These species are classified as undesirable, noxious, harmful, exotic, injurious, or poisonous under State and Federal law, but they do not include species listed as endangered by the Endangered Species Act or species indigenous to the planning area.

***United States Code* (U.S.C.)**

The codification by subject matter of the general and permanent laws of the United States. It is divided by broad subjects into 50 titles and published by the Office of the Law Revision Counsel of the U.S. House of Representatives. Since 1926, the *United States Code* has been published every six years. In between editions, annual cumulative supplements are published to present the most current information.

U.S. Army Corps of Engineers (USACE)

An organization within the U.S. Army that is the builder and now the owner-operator of many of the Federal dams in the in the United States.

U.S. Department of Energy (DOE)

A department of the Federal Government established in 1977 by the Department of Energy Organization Act to consolidate the major Federal energy functions into one cabinet-level department that would formulate a comprehensive, balanced national energy policy. Responsible for regulatory, research, and marketing programs related to energy production and use.

U.S. Department of Transportation (DOT)

A department of the Federal Government established in 1966 to oversee Federal highway, air, railroad, maritime, and other transportation administration functions.

U.S. Environmental Protection Agency (EPA)

The Federal agency created in 1970 to permit coordinated and effective governmental action for protecting the environment by the systematic abatement and control of pollution by integrating research, monitoring, standard setting, and enforcement activities.

U.S. Fish and Wildlife Service (USFWS)

An agency within the U.S. Department of the Interior (DOI) responsible for guiding conservation, development, and management of U.S. fish and wildlife resources.

U.S. Forest Service (USFS)

An agency of the U.S. Department of Agriculture (USDA) that administers the nation's national forests and grasslands.

U.S. Geological Survey (USGS)

A scientific agency of the U.S. Government that studies the landscape of the United States, its natural resources, and the natural hazards that threaten it.

utility

A public or private organization created for the purpose of selling or supplying for general public use water, electric energy, telephone service, or other items or services.

very low frequency (VLF)

Radio frequencies (RFs) in the range of 3 to 30 kHz.

visual quality objective (VQO)

An approved resource management objective that reflects a desired level of visual quality based on the physical and sociological characteristics of the area; refers to the degree of acceptable human alteration to the characteristic landscape.

volt (V)

The unit of electromotive force, or voltage, which, if steadily applied to a circuit having a resistance of 1 ohm, will produce a current of 1 ampere.

voltage

The driving force that causes a current to flow in an electric circuit. Voltage and volt are often used interchangeably.

watershed

The land area that drains into a stream or lake.

weeds

These plants interfere with management objectives for a given area at a given point in time.

Western

See Western Area Power Administration.

Western Area Power Administration (Western)

One of the U.S. Department of Energy's (DOE's) four power marketing agencies. Headquartered in Lakewood, Colorado, its service area includes 15 central and western states.

wetlands

Areas that are inundated by surface water or groundwater often enough to support vegetation or aquatic life that requires saturated or seasonally saturated soil conditions, such as the conditions in swamps, bogs, fens, marshes, and estuaries.

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