AREVA

10 CFR 70.5

December 4, 2009

AES-O-NRC-09-00202-0

ATTN: Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

AREVA Enrichment Services LLC
Eagle Rock Enrichment Facility
NRC Docket No: 70-7015

Subject: AREVA Enrichment Services LLC Environmental Report for the Eagle Rock Enrichment Facility; Supplemental Information – New Appendix H, EREF 161-KV Transmission Line Project

On April 23, 2009, AREVA Enrichment Services LLC (AES) submitted a revised License Application to the U.S. Nuclear Regulatory Commission (NRC) to construct and operate the Eagle Rock Enrichment Facility (EREF) in Bonneville County, Idaho (Ref. 1).

On August 10, 2009, the NRC transmitted to AES requests for additional information (RAIs) regarding the EREF Environmental Report (ER) (Ref. 2). On September 9, 2009, AES submitted the response to the NRC ER RAIs (Ref. 3). Subsequently, the NRC requested additional information regarding the EREF 161-KV Transmission Line Project to be constructed and owned by Rocky Mountain Power. Appendix H to the EREF ER (provided in Enclosure 2) has been prepared in response to the request for additional information.

Enclosure 3 contains the Cultural Resource Inventory for the EREF 161-kV Transmission Line Project. Enclosure 3 contains proprietary information that AES is requesting be withheld from public disclosure in accordance with 10 CFR 2.390. Enclosure 1 provides an affidavit supporting our request to withhold the information identified in Enclosure 3 in accordance with 10 CFR 2.390(b).

The EREF License Application will be revised to include Enclosures 2 and 3 in the EREF Environmental Report Revision 2.

AREVA ENRICHMENT SERVICES LLC
Solomon Pond Park - 400 Donald Lynch Boulevard, Marlborough, MA 01752
Tel. : 508 229 2100 - Fax : 508 573 6610 - www.areva.com

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If you have any questions regarding this submittal, please contact me at (508) 573-6554.

Respectfully,

Jim A. Kay
Licensing Manager

References:

1) S. Shakir (AES) Letter to the U.S. Nuclear Regulatory Commission, Revision 1 to License Application for the Eagle Rock Enrichment Facility, dated April 23, 2009.
2) B. Reilly (U.S. Nuclear Regulatory Commission) Letter to Jim Kay, Licensing Manager, Eagle Rock Enrichment Facility, AREVA Enrichment Services LLC, Request for Additional Information - AREVA Enrichment Services LLC Environmental Report for the Eagle Rock Enrichment Facility, dated August 10, 2009.
3) J. Kay (AES) Letter to the U.S. Nuclear Regulatory Commission, Response to Requests for Additional Information – AREVA Enrichment Services LLC Environmental Report for the Eagle Rock Enrichment Facility, dated September 9, 2009.

Enclosures:

1) Affidavit of Jim A. Kay
2) Supplemental Information - EREF Environmental Report Appendix H, EREF 161-KV Transmission Line Project
3) EREF 161-KV Transmission Line Project Cultural Resources Survey

Commitment:

1) EREF License Application will be revised to include Enclosures 2 and 3 in the EREF Environmental Report Revision 2.

CC:
Breeda Reilly, U.S. NRC Senior Project Manager
Steve Lemont, U.S. NRC Senior Project Manager
Bruce Biwer, Argonne National Laboratory
Ken Reid, Idaho State Historic Preservation Officer
Wendy Reynolds, Field Manager-Bureau of Land Management Upper Snake Field Office

a) I am the Licensing Manager for the AREVA Enrichment Services LLC (AES), and as such have the responsibility of reviewing the proprietary and confidential information sought to be withheld from public disclosure in connection with our application to construct and operate a uranium enrichment facility. I am authorized to apply for the withholding of such proprietary and confidential information from public disclosure on behalf of AES.

b) I am making this affidavit in conformance with the provisions of 10 CFR 2.390 of the regulations of the Nuclear Regulatory Commission (NRC), and in conjunction with AES's request for withholding, which is accompanied by this affidavit.

c) I have knowledge of the criteria used by AES in designating information as proprietary or confidential.

d) By this submittal, AES seeks to protect from disclosure certain proprietary information contained in Enclosure 3. Enclosure 3 contains EREF 161-KV Transmission Line Project (Cultural Resources Survey). This affidavit discusses the bases for withholding certain portions of this submittal, as indicated therein, from public disclosure.

e) Pursuant to the provisions of 10 CFR 2.390(b)(4), the following is furnished for consideration by the NRC in determining whether the proprietary information sought to be protected should be withheld from public disclosure.

1. The information is sought to the withheld from public disclosure, because it indicates the location of possible historic sites exempt from public disclosure under Idaho State Law. Under Idaho Code 9-340E(1), records, maps, or other records indicating the location of archaeological or geophysical sites or endangered species, if not already known to the general public, are exempt from public disclosure.
2. The information sought to be withheld is being provided to the NRC in confidence, and, under the provisions of 10 CFR 2.390, it is to be received in confidence by the NRC.
3. The information sought to be withheld is not available in public sources, to the best of AES's knowledge and belief.

For all of the reasons discussed above, AES requests that the identified proprietary information be withheld from public disclosure.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on December 4, 2009.

J.A. Kay

Mr. Jim A. Kay
Licensing Manager of AES LLC
400 Donald Lynch Boulevard
Marlborough, MA 01752

Maureen L. Lyons
Notary Public

SUPPLEMENTAL INFORMATION
EREF ENVIRONMENTAL REPORT

APPENDIX H
EREF 161-KV TRANSMISSION LINE PROJECT

Appendix H
Environmental Report
161-kV Transmission Line Project
Eagle Rock Enrichment Facility

November 2009

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1 INTRODUCTION TO THE ENVIRONMENTAL REPORT

1.1 Background

AREVA Enrichment Services, LLC (AES) has submitted an application to the Nuclear Regulatory Commission (NRC) for a license to construct and operate a gas centrifuge uranium enrichment facility. The proposed facility, the Eagle Rock Enrichment Facility (EREF), would be located near Idaho Falls, Idaho. Electrical services beyond those currently existing near the facility would be required to operate the EREF. From plant startup in 2014, maximum expected load would ramp up to 39 MVA, and an additional 39 MVA load may be required beginning in 2018 (thus, a total of 78 MW of electrical power may be required). Uninterrupted electrical power is necessary to keep the centrifuges running continuously. Thus, a dual redundant electrical supply utilizing separate feeders is required.

Rocky Mountain Power (RMP), a division of PacifiCorp, has applied for a right-of-way grant for the construction, operation, and maintenance of the proposed 161-kilovolt (kV) transmission lines and associated structures (e.g., substations) that would provide electric power to operate the EREF. These lines would originate from existing substations in the region (Antelope Substation from the west, and Bonneville Substation from the east) and extend to the new point of service (Twin Buttes Substation) for the EREF. A right-of-way would need to be obtained from the Bureau of Land Management (BLM) for proposed routes that cross federal lands managed and administered by the BLM, an easement would need to be obtained from the State of Idaho for the proposed route that crosses state land, and easements from private landowners would be required for proposed routes on their lands. AES would construct, own, and operate a 161-kV substation immediately adjacent to the new RMP Twin Buttes Substation that would distribute power within the EREF.

The NRC is preparing an Environmental Impact Statement (EIS) to analyze the impacts of constructing and operating the EREF in accordance with the National Environmental Policy Act (NEPA) of 1969, as amended (Public Law 91-190, 42 USC 4321-4347; USC, 2009a). This environmental report (ER) has been prepared to analyze the impacts of constructing the proposed 161-kV transmission lines and Twin Buttes Substation to provide electrical power to the EREF.

This ER evaluates the environmental impacts of the proposed transmission line and associated structures action. Accordingly, this document discusses the Proposed Action, the need for and purpose of the Proposed Action, and applicable regulatory requirements, permits, and required consultations; considers reasonable options for transmission line routing; describes the proposed transmission line and associated structures action and the environment potentially affected by the Proposed Action; presents and compares the potential impacts resulting from the Proposed Action; and identifies mitigation measures that could eliminate or lessen the potential environmental impacts of the Proposed Action.

A separate ER has been prepared for the EREF. That ER was prepared specifically to discuss the environmental effects of constructing and operating the EREF, and as such includes environmental information relevant to that parcel of private land. This ER was prepared to provide additional information on the transmission facilities that would be needed to operate the EREF, including the transmission facilities within the EREF Area of Disturbance.

This ER supplements the EREF ER. Additional surveys and studies were conducted along Transmission Route Option 1 (see Section 2.5.1) and Transmission Route Option 2 (see Section 2.5.2) to characterize the environment of areas not previously evaluated. Field surveys were conducted for a 91-m (300-ft) width along the proposed transmission line centerlines (Figure H-1), including within the EREF property up to the area of proposed disturbance for the EREF project area (EREF ER Section 3.8.1). A portion of the proposed transmission line routes from the east and west, and the new RMP Twin Buttes

Substation, are located within the EREF property and within the EREF area of proposed disturbance. The east line extends north within the EREF property to the EREF area of proposed disturbance. The line is routed east of and continues north of the EREF controlled area (i.e., area within the security fence containing the facility buildings and cylinder storage pads). The line then extends west of the EREF controlled area, then south to the RMP Twin Buttes Substation. The west line extends north within the EREF property following the EREF area of proposed disturbance (for the construction access road). Within the EREF area of disturbance, the line runs along the west side of the EREF controlled area, while continuing north to the RMP Twin Buttes Substation. The EREF ER describes the environment and mitigation measures related to construction activities within the EREF site.

Prior to RMP construction activities within the EREF site, initial construction activities such as ground clearing and grading of the previously undisturbed areas will be complete and environmental concerns that accompany RMP transmission line and substation construction within the boundaries of the EREF (i.e., cultural resources, ecological resources) will be mitigated. A portion of the RMP transmission lines and the Twin Buttes Substation will be within this cleared and graded area. AES will ensure that cultural resources site MW004 (EREF ER Sections 4.8 and 5.2.8) and ecological resources related to critical plants and habitat (EREF ER Sections 4.5 and 5.2.5) are mitigated prior to RMP construction activities within the boundaries of the EREF. RMP will comply with the AES practices, procedures, and applicable mitigation measures for construction activities within the EREF property.

1.2 Purpose of and Need for Proposed Action

1.2.1 Applicant's Underlying Purpose and Need

Electrical services are needed to operate the EREF. AES will contract with RMP to provide the necessary electric transmission service. To address the power demand needs at the EREF, RMP is proposing to construct, operate, and maintain two new transmission lines to the EREF point of service (i.e., the new RMP Twin Buttes Substation).

The purpose of the proposed EREF transmission line project is to provide electrical power and related transmission services to operate the EREF. Current electrical services near the EREF are not adequate for this purpose; therefore, RMP would need to construct two new 161-kV transmission lines to supply continuous power to the EREF. RMP is proposing to construct, operate, and maintain transmission lines across public and private lands to supply electrical power to the EREF. The proposed electrical service must be obtained at a reasonable cost and within acceptable engineering design standards while minimizing environmental impacts.

1.2.2 Need for Agency Action

Because the transmission line route options cross federal lands managed and administered by the BLM, RMP is requesting a grant of right-of-way from the BLM for transmission line facilities located on BLM-managed and BLM-administered public lands. Therefore, the BLM has the need to respond to the application for crossing lands under their jurisdiction and granting the right-of-way for the construction and operation of the two new 161-kV transmission lines to the EREF point of service.

1.3 Location of Proposed Action

The proposed EREF will be located on the north side of U.S. Highway 20, approximately 32 km (20 mi) west of Idaho Falls, Idaho, in Bonneville County. The proposed transmission line routes span federal and private lands within portions of Bonneville, Bingham, and Butte Counties. Much of the proposed transmission line route is composed of native sagebrush steppe and crested wheatgrass plantings on

federal lands, and irrigated agricultural land and pasture land on private lands. The federal land is managed and administered by the BLM. Elevation in the project area ranges from approximately 1,485 to 1,650 m (4,870 to 5,420 ft) above sea level.

The region's semi-arid climate is characterized by cold, dry winters; cool, wet springs; and hot, dry summers. Precipitation for the area averages 22.2 cm (8.73 in) per year (for the time period 1954-2005). The month of May typically experiences the highest precipitation and the months of July and August experience the lowest precipitation. Summer precipitation is often in the form of intense, localized afternoon thunderstorms. Average maximum temperature is 30.6°C (87°F) in July and average minimum temperature is 15°C (5°F) in January (WRCC, 2009). Refer to EREF ER Section 3.6 for additional information on climate for the region.

One of the two proposed 161-kV transmission line routes would extend west from the existing RMP Bonneville Substation, located in Bonneville County, Idaho, and follow one of two routes (Figure H-1):

1) West along the county road (West 65 North Street) to the existing RMP Kettle Substation, a distance of approximately 14.5 km (9 mi), continuing west to the eastern portion of the EREF site, a distance of 1.2 km (0.75 mi), then north within the EREF site to its northern end, then west and south to the new RMP Twin Buttes Substation, for a distance of approximately 6.4 km (4 mi); or,

2) South to Highway 20, a distance of approximately 3.9 km (2.4 mi), west along the existing Highway 20 corridor to the eastern portion of the EREF site, a distance of approximately 16.1 km (10 mi), then north within the EREF site to its northern end, then west and south to the new RMP Twin Buttes Substation, for a distance of approximately 6.4 km (4 mi).

A second transmission line would extend south from the existing RMP Antelope Substation in Butte County, Idaho, to U.S. Highway 20, then extend east along the existing U.S. Highway 20 corridor through portions of Butte, Bingham and Bonneville Counties to the EREF site, a distance of approximately 43.5 km (27 mi), then extend north within the EREF site to the new RMP Twin Buttes Substation for a distance of approximately 3.4 km (2.1 mi) (Figure H-1). A large portion of this route would be constructed on the Idaho National Laboratory (INL), a 2,300 km^2 (890 mi^2) DOE facility located on BLM-administered lands in Butte, Bingham, and Jefferson Counties.

1.4 Schedule of Major Steps Associated with the Proposed Action

The following are key dates and milestones for the proposed 161-kV transmission line project:

Milestone	Estimated Date
Commence construction	July 2011
Testing and commissioning	July 2012
RMP permanent power available	September 2012

RMP anticipates future users of this electrical service and does not anticipate decommissioning of the transmission lines upon termination of the EREF license and subsequent decommissioning of the EREF.

1.5 Applicable Regulatory Requirements, Permits and Required Consultations

This ER was prepared to analyze the impacts of constructing, operating, and maintaining new transmissions lines and associated structures to service the EREF. The regulations pertinent to the transmission line project require permits from, consultations with, or approvals by other governing or regulatory agencies. Federal, state and local statutes and regulations have been reviewed to determine

their applicability to the construction and operation phases of the proposed transmission line project. Construction and operational permit applications would be prepared and submitted, and regulatory approval and/or permits would be received prior to construction or operation of the proposed transmission line project, as appropriate. In addition to the federal and state requirements described below, new land rights for the transmission line right-of-way would be required for private lands crossed by the transmission lines.

1.5.1 Federal

U.S. Department of Interior, Bureau of Land Management Right-of-Way Grant

The Federal Land Policy and Management Act (FLPMA) of 1976, as amended (Public Law 94-579, 43 USC 1761-1771; USC, 2009b) establishes a multiple use framework for management of public land which includes use for energy transmission facilities. A right-of-way grant is required for construction over land under federal management and FLPMA requires BLM to respond to applications for right-of-way grants. If transmission line development is determined to be acceptable, the BLM would work with RMP through its Application for Transportation and Utility Systems and Facilities on Federal Lands (SF 299, 2009) and Plan of Development (POD) to decide the site-specific location for the line and support structures, mitigation measures and best management practices (BMPs) to be implemented to reduce environmental effects, determine permit issuance terms and conditions, and establish pre- and post-construction reporting and monitoring before granting approval of the right-of-way to RMP.

U.S. Department of Interior, Endangered Species Act of 1973

The Endangered Species Act (ESA) of 1973, as amended (Public Law 93-205, 16 USC 1531; USC, 2009c) provides for the listing and protection of endangered and threatened species and their critical habitat. The U.S. Fish and Wildlife Service (USFWS) is responsible for the protection and recovery of threatened and endangered species under the ESA. The Act requires consultation under Section 7 if any listed species may be adversely affected.

A rare, threatened and endangered species survey for both plants and animals was conducted along the proposed transmission line corridors to the EREF. The EREF was surveyed previously as described in the EREF ER Section 3.5 and supplemental surveys. No threatened or endangered species or designated critical habitat is present along the proposed transmission line corridors outside the EREF Area of Disturbance (see Sections 3.9 and 3.10).

U.S. Department of Interior, Migratory Bird Treaty Act of 1918

The USFWS is responsible for the protection of migratory bird species under the Migratory Bird Treaty Act (MBTA) of 1918, as amended (16 USC 703-712; USC, 2009d). Additional protective measures would be implemented by RMP during the design phase of the project to limit impact to nesting, breeding and migratory corridors where possible. These measures include those presented in the *Suggested Practices for Raptor Protection on Power Lines* (APLIC, 2006), the Bald Eagle Protection Act of 1940, as amended (16 USC 668-668d; USC, 2009e), and other applicable regulations and practices (PacifiCorp, 2006).

No nests were observed along the proposed transmission line corridors. Although the transmission lines will occupy land that is potential habitat for several migratory species protected under the MBTA, the mitigation measures included as part of the Proposed Action (see Section 2.4.3) are expected to minimize potential impacts to raptors and other avian species.

National Historic Preservation Act of 1966

Section 106 of the National Historic Preservation Act (NHPA) of 1966, as amended (Public Law 89-665, 16 USC 470; USC, 2009f) requires federal agencies to take into account the effects of their undertakings

on cultural resources, either listed in or eligible to be listed in the National Register of Historic Places (NRHP), and afford the State Historic Preservation Office (SHPO), affiliated American Indian tribes, individuals with a demonstrated interest in the undertaking, and the general public, a reasonable opportunity to comment on such undertakings. Section 110 of the Act directs federal agencies to take responsibility for the preservation and management of cultural resources that are owned or controlled by the agency. Section 304 of this Act prohibits the divulgence of cultural resource locations.

An archaeological survey was conducted along the proposed transmission line corridors leading up to the previously surveyed EREF Area of Disturbance. The results of this survey are summarized in Section 3.3. A total of 37 cultural resource projects have occurred in the vicinity of the proposed transmission lines resulting in the recordation of 252 sites within 1.6 km (1.0 mi) of the centerline of the proposed transmission line routes. Thirteen (13) new sites were recorded as a result of the surveys carried out for this ER. An archaeological survey report has been prepared and will be submitted to the Idaho SHPO. Mitigation measures for archaeological resources included as part of the Proposed Action (see Section 2.4.3) are expected to minimize potential impacts to archaeological resources.

U.S. Environmental Protection Agency

As authorized by the Clean Water Act (CWA) of 1972 (Public Law 92-500, 33 USC 1251; USC, 2009g), the U.S. Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. In Idaho, the NPDES permit program is administered by the EPA, Region 10. Construction of the proposed transmission lines will be greater than 0.4 ha (1.0 ac). Thus, RMP will obtain a NPDES Construction General Permit from Region 10 of the EPA and a Stormwater Pollution Prevention Plan (SWPPP) will be developed, pursuant to Section 402 of the CWA.

1.5.2 State of Idaho

Several state agencies are responsible for the protection and management of the environment and public health in the state of Idaho. Requirements of the following state agencies regarding permit and consultation have been reviewed: Idaho Public Utilities Commission; Idaho Department of Environmental Quality (IDEQ); Idaho SHPO, Idaho Transportation Department, and Idaho Department of Lands. Applicable requirements are summarized below by the agency that has responsibility for consultations and permitting actions.

Idaho Public Utilities Commission

RMP will consult with the Idaho Public Utilities Commission to obtain a permit for construction of the proposed transmission lines. Adherence to procedures for construction of transmission lines, Idaho Statute, Title 61, Public Utility Regulation, Chapter 17, Siting of Certain Electrical Transmission Facilities, will occur.

Idaho Department of Environmental Quality

RMP will consult with the IDEQ Air Quality Division to ensure the Rules for Control of Air Pollution in Idaho will be adhered to during construction. Construction BMPs for air quality will be included as part of the construction permit (see Section 2.4.3). Mitigation measures such as watering to minimize fugitive dust will be followed during construction. In addition, the IDEQ Water Quality Division will certify that the NPDES-permitted project complies with state water quality standards, in accordance with Section 401 of the CWA.

Idaho State Historic Preservation Office

AES and RMP retained a subcontractor who obtained a permit to conduct an archaeological survey of the transmission lines project area. A Cultural Resource Inventory was conducted on the site in October and November, 2009 and a report has been prepared for the Idaho SHPO. The Idaho SHPO participates with federal agencies in the consultation process during the planning of federal actions which may affect historic properties. AES will continue consultation with the Idaho SHPO to ensure concurrence with the findings in the report and acceptance by federal and state agencies. As mentioned previously, an archaeological survey report has been prepared and submitted to the Idaho SHPO. Mitigation measures for archaeological resources are described in Section 2.4.3.

Idaho Transportation Department

The Idaho Transportation Department (ITD) is responsible for design, construction, and maintenance of the state transportation system. They are responsible for reviewing and permitting new access to state highways, including U.S. Highway 20. AES has initiated discussions with ITD on design and construction of access points on to U.S. Highway 20 for the EREF. Construction of the transmission lines will utilize existing access points as much as possible. If new access points from U.S. Highway 20 are required, RMP will receive a permit from ITD prior to construction.

Idaho Department of Lands

The Idaho Department of Lands (IDL) is responsible for granting the easement for transmission lines that cross state lands. AES will consult with the IDL Eastern Idaho Area Office to obtain an easement for construction of the proposed transmission lines across state lands.

1.5.3 Local Agencies

No local or county zoning land, land use planning, or associated review process requirements have been identified to date. Plans for construction and operation of the transmission lines will be communicated to and coordinated with Bonneville, Bingham and Butte Counties prior to commencement of construction of permanent power, and any applicable local ordinances and regulations identified would be followed during construction and operation of the proposed transmission lines.

1.5.4 Permit and Approval Status

A right-of-way application - Application for Transportation and Utility Systems and Facilities on Federal Lands (SF 299, 2009) - and draft POD have been submitted to the BLM by RMP. Updates to the right-of-way application and POD will be submitted to the BLM to provide the environmental characterization of the transmission line action (as presented within this ER), detailed design of the transmission lines, and details of the related construction and operations, as that information becomes available.

2 PROPOSED ACTION AND ALTERNATIVES

This chapter describes the alternatives of not building the transmission lines (No Action) and of constructing the new transmission lines that would service the EREF (Proposed Action). A description of the construction, operation, and maintenance of the proposed 161-kV transmission line is also described as are mitigation measures that would be incorporated into the Proposed Action.

2.1 Description of Alternatives

2.1.1 No Action – Do Not Build Transmission Line

Under the No Action alternative, the proposed 161-kV transmission lines would not be constructed by RMP. Under the No Action alternative, a right-of-way grant for the transmission line would not be issued by the BLM for the routes under consideration in this study. Without the 161-kV electrical power supply to the EREF, the EREF would not be built and the uranium enrichment needs for the United States as described in the ER for the EREF would not be met.

2.1.2 Proposed Action – Construct Transmission Line

RMP would construct two new 161-kV transmission lines and a new substation (designated Twin Buttes Substation) to serve a new substation being built by AES for the EREF. The new transmission lines would connect into the existing electrical grid system at two points owned by RMP: Antelope Substation and Bonneville Substation. Refer to Section 2.5.1, Transmission Route Option 1, and Section 2.5.2, Transmission Route Option 2, for a detailed description of the transmission line routes.

This alternative would meet the need to provide electric power to AES for the EREF and provide an opportunity to serve additional future load increases in the area. This alternative would also provide an additional transmission line to serve the INL. This alternative would require the purchase and clearing of new or existing transmission line rights-of-way and easements for a distance ranging from approximately 43.5 km (27 mi) from the west (Antelope Substation); approximately 15.7 to 20 km (9.75 to 12.4 mi) from the east (Bonneville Substation), depending on the final route selected from the east; and approximately 3.4 km (2.1 mi) for the west line and 6.4 km (4 mi) for the east line within the proposed EREF site.

2.3 Alternatives Considered but not Analyzed in Detail

Two transmission line routes considered but not analyzed in detail, Transmission Route Option 3 and Transmission Route Option 4, included a third connection point; a tap connection to the RMP-owned Goshen-Antelope Transmission Line to the south of the EREF (PacifiCorp, 2008). Transmission Route Option 3 would be to construct a 161-kV line originating at the existing Bonneville Substation, extending west to the proposed EREF substation, and a second line extending south to a tap connection to the RMP-owned Goshen–Antelope Transmission Line. Refer to Section 2.5.3, Transmission Route Option 3, for a detailed description of the transmission line route.

Transmission Route Option 4 would be to construct two 161-kV lines extending south to a tap connection to the RMP-owned Goshen–Antelope Transmission Line. Refer to Section 2.5.4, Transmission Route Option 4, for a detailed description of the transmission line route.

A loop between the Bonneville Substation and the Jefferson Substation was considered, but a system impact analysis conducted by RMP concluded that this transmission route would be unable to support the magnitude of projected load under normal conditions by start-up of the EREF, causing low voltage issues and line capacity overloads during contingencies. Without extensive investment in facility upgrades, this was determined not to be a viable option. This route is not discussed further within this ER.

2.4 Description of Construction, Operation, and Maintenance of the Proposed 161-kV Transmission Line and Substation

The design, construction, operation and maintenance of the 161-kV transmission lines would meet or exceed the requirements of the National Electrical Safety Code (Marne, 2007), U.S. Department of Labor

Occupational Safety and Health Administration (OSHA) regulations, and RMP's requirements for safety and protection of landowners and their property. Additional supplemental documents that provide specifications for the transmission lines, including engineering drawings and construction guidelines, are currently being prepared by RMP and will be included in their final POD to be submitted to BLM.

2.4.1 Transmission Line Construction

Structures

The proposed 161-kV transmission lines would primarily use a combination of double wood pole H-frame structures (Figure H-2a) and wood single pole structures (Figure H-2b). In general, wood pole H-frame structures would be used for most of the proposed routes with two exceptions. From the Bonneville Substation to the Kettle Substation along the county road (Transmission Route Option 1), a single pole double-circuit with an under-build would be used. Along U.S. Highway 20 on the east to the Kettle Substation (Transmission Route Option 2), a single pole single-circuit would be used. Most poles would be directly imbedded in holes augured into the ground to a depth generally equal to 10 percent of the pole's length plus an additional 0.6 m (2 ft). Steel dead poles would be imbedded to a depth of approximately 9.1 m (30 ft). The holes would normally be backfilled with the excavated material. In some cases, gravel or a cement and gravel mixture might be used. Most poles would be self-supporting (non-guyed), although poles at angles in the transmission line may require supporting guy wires. Approximately every 8 km (5 mi) along the proposed transmission line route, a dead end structure composed of three poles and down guys will be required (Figure H-2c). Steel poles would be used at the dead ends of the single pole structure routes described above, and at the dead end ties to the Bonneville Substation.

The wood pole H-frame structures would be spaced approximately 215 m (700 ft) apart with a pole height of approximately 20 m (65.5 ft) above ground. The wood single pole structures would be spaced approximately 91 m (300 ft) apart with a pole height of approximately 24 m (79 ft) above ground, with the exact spacing and height of each structure governed by topography and safety requirements for conductor clearances and resource (e.g., cultural, biological) impact avoidance measures. The steel dead end poles would have a pole height of approximately 24.4 m (80 ft) above ground. The wood single pole structures for Transmission Route Option 1 along the existing 69-kV transmission line corridor will, to the extent possible, use the locations of the existing 69-kV poles to be dismantled and removed.

For existing transmission lines within the proposed routes, such as the 69-kV line that runs from the Bonneville Substation to the Kettle Substation near the EREF site (Transmission Route Option 1), RMP will build a double-circuit transmission line (161-kV and 69-kV), with a 25-kV transmission line underbuild. The double circuit build would consist of replacing the existing transmission line structures with new structures (as described above) that would support both the proposed 161-kV circuit and the existing 69-kV circuit on the opposite side of the 161-kV transmission line (Figure H-2b). The other transmission line routes would accommodate the construction of the 161-kV line with no double-circuit or underbuild on the 161-kV structures.

Other utility lines that may be present within the corridor, such as a telephone line which parallels U.S. Highway 20 from the eastern end of the project area to the radio tower approximately 28 km (17.4 mi) from the western edge of the project, will be avoided, accommodated into the current design, or removed if found to be non-functional.

Conductors, Insulators, and Associated Hardware

Three conductors (the cables that carry the electrical current) are required to make up a circuit in alternating current transmission lines. For 161-kV transmission lines, each conductor is made up of a single Aluminum Core Steel Reinforced (ACSR) cable. Conductors would be non-specular (non-reflective). Minimum conductor height above ground would exceed NESC standards (Marne, 2007). In general, the clearance for the 161-kV line will be 7.9 m (26 ft) above ground; the NESC standard is 6.5 m (21.3 ft). Because the 69-kV line would be built on the opposite side of the poles along a portion of Transmission Line Route Option 1 (see description above), it would also be constructed with the same clearances above ground as the 161-kV line. The 25-kV underbuild will have a minimum of 7 m (23 ft) clearance above ground; the NESC standard is 5.6 m (18.5 ft).

The conductors would be attached to fiberglass, ceramic, or epoxy insulators suspended from the structure cross arms or attached directly to the poles. Specific length of insulator strings would be determined in the final line design. The running angles and dead-end structures would have similar insulators; however, these conductors would be longer in length. A smaller overhead ground wire will be attached to the top of the structures and will contain fiber optic cables for communications including Supervisory Control and Data Acquisition (SCADA) system functions and digital metering. Avian-safe standards will be incorporated into the design of the structures and will include 150 cm (60 in) of horizontal separation and 100 cm (40 in) of vertical separation between energized and/or grounded parts (PacifiCorp, 2006).

Right-of-Way Acquisition

New rights-of-way or easements would be needed for the proposed transmission lines and Twin Buttes Substation. Where H-frame structures would be used, right-of-way easements would need to be 38 m (125 ft) in width. Where single pole structures would be used, the needed right-of-way easement would be 24 m (80 ft) in width (the existing transmission line right-of-way along West 65 North Street is 15.2 m [50 ft] and would be expanded by 4.6 m [15 ft] on either side of the centerline). Existing jurisdictions for lands in the area of the proposed transmission lines include private lands, state lands, and public lands managed and/or administered by the BLM. Application for right-of-way has been filed by RMP with the Upper Snake BLM Field Office for transmission line facilities on public lands (Section 1.5.4). The land rights would be obtained in the name of RMP. Easements would be obtained by RMP from landowners for the new right-of-way on private land. These easements would give RMP the right to construct, operate, and maintain the proposed transmission lines as well as maintain vegetation in the right-of-way. Fee title for the land within the right-of-way would normally remain with the landowner, and a number of activities such as farming could be continued on the property by the landowner. The easement would prohibit certain activities such as the construction of buildings and any other activities within the right-of way that could interfere with the transmission line or create a hazardous situation.

Alignment Staking

RMP engineers would determine the centerline of the alignment within the right-of-way of the selected route and surveyors would stake out each pole location along the right-of-way. The surveyors would be provided with GIS shapefiles of avoidance areas such as cultural sites to minimize the possibility of accidental disturbance to cultural sites and other resources.

Access Roads

Transmission line construction requires the movement of large vehicles along the right-of-way and from U.S. Highway 20 to the right-of-way. Access roads would be needed to allow vehicle access to each structure and other points along the right-of-way. Once the final pole placement locations have been

determined, acceptable access to the poles and pulling/tensioning sites would be mapped and provided to the construction team. The actual locations of access roads will be determined when the final route is selected, specific alignments have been chosen, and individual structure locations are known. The locations of access roads will be closely coordinated with potentially affected landowners and RMP will obtain the necessary rights for these access roads from landowners.

For the most part, vehicles would use existing roads to gain access to the transmission line rights-of-way. Existing roads including farm and field roads would be used where possible. In areas where overland travel routes are required outside the construction right-of-way, these areas will be surveyed for cultural and biological resources and the locations of acceptable travel routes would be conveyed to the construction crew. Any findings will be communicated to the Idaho SHPO. New access roads will be located on the right-of-way wherever possible and may require minor surface grading to accommodate site access by large equipment. Any necessary permits would be obtained from ITD prior to construction, as described in Section 1.5.2. Because of the relatively flat terrain and surface materials, it is anticipated that grading will not be necessary. New access roads would be about 6 m (20 ft) wide and surfaced with dirt or gravel. Culverts and other drainage devices, fences, and gates would be installed as necessary.

If clearing and grading are required to allow heavy equipment down the right-of-way or to create a level work area, the top 15 cm (6 in) of soil will be removed and stockpiled. This material will be replaced upon completion of construction activities as close to preconstruction contours as possible and the areas would be reseeded as necessary. All existing roads would be left in a condition equal to or better than their condition prior to the construction of the transmission lines. Because of the need to maintain adequate clearance between tall vegetation and transmission line conductors, as well as to provide access for construction equipment, most larger shrubs would be removed from the entire width of the right-of-way (smaller shrubs would be driven over). New access roads would be planted with approved seed mixtures following construction. However, as previously stated, because of the relatively flat terrain and surface materials, it is anticipated that grading will not be necessary and clearing will be minimal.

Construction Assembly

Construction Yards

One or more construction yards would be required that would serve as field offices, reporting locations for workers, parking space for vehicles and equipment, sites for material storage, and stations for equipment maintenance. RMP would have the responsibility to coordinate the construction and approval of the yards when needed. RMP would utilize, to the extent practicable, existing and proposed substation yards for construction staging areas. Other staging areas on private lands may be required, and would be coordinated by RMP with the landowner in advance of construction. These areas are typically 2 to 4 ha (5 to 10 ac) in size, relatively flat, previously cleared, and located adjacent to an existing paved road near the transmission line. Depending on site conditions, some minor grading and installation of drainage structures may be required. Because of the relatively flat terrain and surface materials, it is anticipated that grading will not be necessary. As needed, the areas would be graveled and fenced, and trailers used for material storage and office space would be parked on the areas.

Construction materials will be transported to the construction yards from suppliers in the region. Interstate 15 and U.S. Highways 20 and 26 would be the roadways most used. Semi-trucks with trailers will transport the poles, transformers, conductors, and other required material to various construction yards along the routes. Approximately 80 to 100 truck loads will be required and delivery will be spread

out across the one year construction phase of the project. Any long loads over 26 m (85 ft) in length will require the appropriate transportation permit and pilot cars.

Following the completion of construction activities, all vehicles, unused materials, and construction debris will be removed from the site. Unused materials or materials that may be reused or recycled, such as the poles, conductors, and insulators from Alternate Route Option 1, will be transported by semi-truck to an existing RMP equipment yard or recycled. All non re-useable metals (wire, hardware, etc) will be transported to a salvage yard for scrap metal. Poles or wood products that cannot be reused may be given to landowners along the route or will be transported by semi-truck to a licensed construction debris landfill along with other construction debris and non-hazardous materials. All materials will be transported in compliance with federal and state regulations, as described in Section 1.5.2.

Structure Sites

At structure sites, relatively level areas would be needed to facilitate the safe operation of equipment, such as construction cranes. These areas would be approximately 38 m (125 ft) in-line and 38 m (125 ft) wide. Grading would be avoided when possible and would only be needed on excessively undulating or steep terrain. The work areas would only be cleared of vegetation to the extent necessary to allow vehicle passage and construction assembly. In areas where vegetation would be cleared the upper 15 cm (6 in) of soil would be removed and stockpiled separately from any spoil. After line construction, disturbed areas would be graded to blend as near as possible with the natural contours, the upper 15 cm (6 in) of soil would be replaced and the areas would be reseeded as necessary.

Pulling and Tensioning Sites

Sites would be located at either dead end or route angle change structures at approximately 3.2 km (2 mi) increments along the centerline of the project. At structure construction sites, the work area would be approximately 122 m (400 ft) in-line by 61 m (200 ft) wide for H-poles and 122 m (400 ft) in-line by 49 m (160 ft) wide for single poles. At angles greater than 45 degrees, surface disturbance from pulling and tensioning may occur within a 150 m (500 ft) radius of the outside of the angle structure. As with structure sites, the work areas would be cleared of vegetation only to the extent necessary. The top 15 cm (6 in) of soil would be removed and stockpiled separately from other spoils. After line construction, areas would be graded to blend as near as possible with the natural contours, the top 15 cm (6 in) of soil would be replaced, and the disturbed areas would be reseeded as necessary.

Pole and Conductor Installation

The poles, cross arms, and other required material would be transported through the right-of-way to each pole location. In sequence the appropriate materials would be connected to the pole, the hole would be augured, and the poles would be lifted up by a crane and set into the hole. Once the poles are in place, the conductor (wire) would be strung and ample tension would be applied to meet or exceed NESC standards (Marne, 2007). Reels of conductor and ground wire would be delivered to various staging areas along the right-of-way, as described above.

Ground based methods of conductor installation would be used. With this method, ropes would be hung from the stringing sheaves and a pilot line would then be strung along the ground and attached to each rope at the structure location. The pilot line would then be pulled up to the sheave and pulled through until all sheaves within a pull section have the pilot line installed. At that time, the pilot line would be attached to the pulling line which would be pulled back through before attaching to the conductor for the final pull through. The conductors and ground wire would be strung using powered

pulling equipment at one end and powered braking or tensioning equipment at the other end. Once the proper tension was achieved in a pull section, crews would clamp the wires to the insulators and remove the pulleys. Sites for tensioning equipment and pulling equipment would be approximately 3.2 km (2 mi) apart and at angle locations. Upon completion of this task, any graded areas would be restored to original contours and reseeded. The number of workers and types of equipment required to construct the proposed transmission lines are shown in Table H-1.

Substation Installation and Modifications

The design, construction, operation, and maintenance of the new Twin Buttes Substation will meet or exceed the requirements of the NESC, OSHA regulations, and RMP's requirements for safety and protection of landowners and their property. The proposed substation will sit within a 6 ha (15 ac) site on AES property located adjacent to the EREF. Engineering plans, drawings, and construction stipulations are currently being prepared by RMP.

Initial design plans show the proposed Twin Butte substation contained within an approximately 2.1 ha (5.2 ac) fenced area and secured by a 2.1 m (7 ft) high chain link fence topped with 0.3 m (1 ft) of barbed wire. The fenced area is approximately 174 by 122 m (570 by 400 ft) and will have a gravel surface. The substation will consist of the following typical substation components within the fenced area of the substation:

- Control building (approximately 8.5 × 12.2 m [28 × 40 ft);
- Generator (propane or diesel);
- 161-kV power circuit breakers;
- 161-kV air break switches;
- 161-kV metering units;
- 161-kV surge arresters;
- 161-kV capacitive coupled voltage transformers (CCVTs);
- 161-kV station service voltage transformers (SSVTs);
- Steel dead end structures (15.2 m [50 ft] pull-off, 18.3 m [60 ft] height, and possibly a 6.1 m [20 ft] lightning rod in addition to the 18.3 m [60 ft] height);
- Miscellaneous steel support structures; and
- Miscellaneous buswork.

The control building will contain protective relaying and control equipment associated with the transmission portion of the substation. Within the switchgear and control enclosures, equipment for full SCADA system functions and digital metering will be installed to allow control and monitoring of the substation from a remote location.

The substation would be constructed in phases: 1) site preparation (construction of the access drive, clearing and grading); 2) construction of the substation yard; 3) installation of the substation equipment including transformers; 4) tie-ins to the overhead transmission lines; 5) energizing of the substation; and 6) site restoration and stabilization.

The general sequence of events that takes place during the construction of a substation includes:

- Placement of erosion and sedimentation control barriers;
- Removal of vegetation from the proposed fenced area and access drive;
- Construction of the access drive;
- Preparation of the substation site (cut, fill, grading);
- Installing fence, substation foundations, buried conduits and the ground grid;
- Spreading trap rock (gravel);

- Installing electrical components and hardware;
- Installing tie-ins to transmission lines;
- Energizing substation;
- Completing site stabilization, landscaping and site restoration; and
- Removing erosion control barriers upon completion of site stabilization.

The number of workers and types of equipment required to construct the proposed substation are shown in Table H-2.

In addition to construction of the new Twin Buttes Substation, some modifications to the Bonneville and Antelope Substations will be required; no changes are identified at the Kettle Substation at this time. The Bonneville Substation will be expanded by 19.8 m (65 ft) to the east to support this project. The expanded fenced area will be 165 × 110 m (540 × 360 ft). A new 161-kV ring bus (configured as a breaker-and-a-half) will be installed and tied back into the existing substation bus. The following equipment is proposed to be installed within the Bonneville Substation:

- Control building (approximately 8.5 × 12.2 m [28 × 40 ft);
- Generator (propane or diesel);
- 161-kV power circuit breakers;
- 161-kV air break switches;
- 161-kV CCVTs;
- 161-kV SSVTs;
- 161-kV surge arresters;
- 69-kV capacitor banks;
- Steel dead end structures (as described above);
- Miscellaneous steel support structures; and
- Miscellaneous buswork.

The Antelope Substation will be expanded 30.5 m (100 ft) to the south for approximately 121.9 m (400 ft) from the current west fence line to support this project. The existing 161-kV west and east bus will be expanded to the south to support the addition of a new 161-kV line/breaker position. There is room in the existing control house to support this project.

2.4.2 Operation and Maintenance

Operation

The nominal voltage for the project is 161-kV. There could be minor variations of up to 5 percent above the nominal level depending upon load flow. When the transmission and distribution lines have been energized, land uses that are compatible with safety regulations may be permitted in and adjacent to the right-of-way. In previous projects, existing land uses such as agriculture and grazing generally have been permitted within the right-of-way. Incompatible land uses within electrical rights-of-way include construction and maintenance of inhabited dwellings and any use requiring changes in surface elevation that would compromise required conductor clearances of existing or planned facilities.

BLM would retain the authority for permitting all activities within the granted right-of-way on land under BLM jurisdiction. Land uses that comply with local regulations would be permitted adjacent to the right-of-way. Compatible uses of the right-of-way on public lands would require BLM approval.

Safety is a primary concern in the design of transmission systems. The transmission lines would be protected with power circuit breakers and related line relay protection equipment. If conductor failure

were to occur, power would be automatically removed from the affected transmission line(s). An overhead ground wire along the transmission lines provides lightning protection.

The nominal voltage for the Twin Buttes Substation will be 161-kV alternating current (AC). There could be minor variations of up to five percent above the nominal level depending upon load flow. The entire proposed substation site will be fenced to prevent encroachment from wildlife and unauthorized human entry. The substation will be protected with power circuit breakers and related protection and control equipment. If a failure were to occur in the system, power would be automatically removed from the affected lines.

Inspection

Periodic inspections of the transmission lines and substations would be performed from the ground. For non-emergency inspection, maintenance, and repairs, the field crews will adhere to the same precautions that would have been taken during the original construction to avoid historic and cultural resource sites and to minimize impacts to other resources (see Section 2.4.3). These inspections would be conducted to locate damaged conductors, insulators, structures, transformers, and other equipment and to report any abnormal conditions that might hamper the normal operation of the line and substation, or adversely impact the surrounding area. During these inspections, the condition of vegetation within the right-of-way, as well as immediately adjoining the right-of-way, will be noted. These observations will then be used to plan corrective maintenance or routine vegetation management.

Maintenance

Structures used in transmission line construction typically last 40 years or more before needing to be replaced. In the event that a structure must be replaced, the structure would normally be lifted out of the ground by truck-mounted crane-like equipment and the replacement structure inserted into the same hole or an immediately adjacent hole. Access to the structures would be on existing roads where possible.

Emergency maintenance would involve prompt movement of repair crews to repair or replace any damage to the lines or substation components. The emergency work on the transmission lines would be conducted prior to contacting BLM if necessary. Maintenance crews would be instructed to protect crops, plants, wildlife and other resources of significance. Significant cultural sites that are avoided and monitored during construction would be avoided when maintenance crews are working. These cultural site locations would be marked for avoidance on maps for the project. Maintenance activities would be performed in a similar manner to the original construction, as described above. When maintenance or access causes damage to existing resources or roads, restoration procedures following completion of repair work will be similar to those prescribed for normal construction.

The comfort and safety of local residents will be a primary concern during maintenance activities. Noise, dust and the danger presented by maintenance vehicle traffic will be limited to the extent possible (see Section 2.4.3). Equipment required for maintenance activities on the transmission line is dependent upon the type of maintenance required. Equipment that can be expected for maintenance activities will likely not differ from equipment needed for general construction of the line.

Vegetation Management

Some management of vegetation along the right-of-way would be necessary to ensure access to structures and to maintain an adequate distance between transmission line conductors and vegetation. For the 161-kV or 69-kV transmission lines, minimum clearance would be 7.9 m (26 ft) above ground. The 25-kV underbuild would have a minimum of 7 m (23 ft) clearance above ground. Given the land use

in the area of this project, right-of-way maintenance is expected to be minimal. There are no trees in the proposed right-of-way corridor. The principal management technique would be mechanical mowing, using tractor-mounted rotary mowers, and would be based on the results of the periodic inspections described above. Other than vegetation management, little other maintenance work would normally be required.

2.4.3 Mitigation Measures

A number of BMPs and other mitigation measures that are typically incorporated as standard operating procedures by RMP would be implemented as part of this project to reduce or eliminate the potential for adverse impacts to the human and natural environment. Although no substantial impacts are anticipated with implementation of the Proposed Action, the following measures have been identified to enhance protection of certain resources that could potentially be affected by construction, operation and maintenance of the proposed transmission lines. These mitigation measures have been developed to reduce or eliminate adverse impacts from project activities, have been employed and proved effective in similar circumstances and conditions, and are incorporated as an integrated part of the Proposed Transmission Line Action.

Reclamation

As applicable, all graded areas will be restored to original contours to the extent possible and reseeded with an appropriate seed mix. RMP's construction contractor will restore all lands disturbed by that contractor including, but not limited to: access roads, rights-of-way, tensioning and pulling sites, structure sites, and other construction sites or storage areas. As stated previously, the upper 15 cm (6 in) of soil may be removed during the clearing process and stockpiled separately from other grading stockpiles. This material will be replaced upon completion of construction activities.

Timing Restrictions

The project transmission line routes contain suitable habitat for the greater sage-grouse. Thus, sage-grouse may be present in the proposed project area. No sage-grouse leks occur within the 91 m (300 ft) corridor surrounding the centerline of the proposed transmission line centerlines. However, there are documented occurrences of greater sage-grouse within 1.6 km (1 mi) of the project area. Due to the proximity of the project to the closest known sage-grouse leks on INL, seasonal sage-grouse stipulations may be required if at the time of construction, the lek is being used by sage-grouse. Appropriate seasonal sage-grouse stipulations may be coordinated with the BLM in the event that a sage-grouse lek is found to be occupied within 1.6 km (1 mi) of the transmission line corridor at the time of construction. No raptor nests have been identified along the project corridor; however, if a previously unknown raptor nest for a BLM special status species is documented within 1.6 km (1 mi) of the project area during construction, seasonal stipulations may be coordinated with the BLM.

Noxious Weed Control

Equipment and supplies necessary for the construction and reclamation of roads and transmission lines are possible causes of the spread of noxious weeds. Therefore, the following guidelines will be employed during construction and the reclamation stages of the transmission line project to control the spread of noxious weeds:

- Construction equipment, materials and vehicles will be stored at the sites where construction will occur or at specified construction yards. All personal vehicles, sanitary facilities and staging areas will be confined to a limited number of specified locations to decrease chances of incidental disturbance and spread of weeds.

- To help limit the spread and establishment of a noxious weed community within the disturbed areas, prompt establishment of the desired vegetation will be required. Seeding will occur at the appropriate season following the completion of construction activities. Certified "noxious weed-free" seed will be used on all areas to be seeded. Other construction material, such as fill, will also be free of noxious weed seed.

Soil Preservation

The anticipated effects on the soil during construction activities are limited to a potential short-term increase in soil erosion. However, this will be mitigated by proper construction BMPs which include minimizing the construction footprint to the extent possible, limiting site slopes to a horizontal to vertical ratio of four to one or less, protection of undisturbed areas with silt fencing and straw bales as appropriate, and site stabilization practices such as placing crushed stone on top of disturbed soil in areas of concentrated runoff.

Groundwater

RMP will obtain a NPDES Construction General Permit from Region 10 of the EPA and a SWPPP will be developed to prevent impacts to land and groundwater during construction (see Section 1.5.1).

Hazardous Materials

A Spill Prevention, Control and Countermeasures (SPCC) Plan will be implemented during construction to minimize environmental impacts from potential spills and to ensure prompt and appropriate remediation. The SPCC Plan will identify sources, locations and quantities of potential spills and response measures. The plan will also identify individuals and their responsibilities for implementation of the plan and provide for prompt notifications to state and local authorities, as required. Adequately maintained sanitary facilities will be provided for construction crews.

Air Quality

Potential impacts to air quality will be from fugitive dust caused by construction activities and vehicle exhausts. Mitigation measures such as watering to minimize fugitive dust will be used as necessary to minimize potential impacts on air quality. Detailed analysis of emission factors and air quality dispersion models related to construction of the much more substantive EREF showed that air concentrations of the criteria pollutants resulting from vehicle emissions and fugitive dust during construction will be maintained below National Ambient Air Quality Standards (NAAQS). Because activities with the potential to impact air quality are much less with the transmission line construction than with the EREF, impacts to air quality are expected to be negligible. Refer to the EREF ER Section 4.6 for additional discussion regarding air quality impacts.

Historical and Cultural Resources

Mitigation measures will be in place to minimize potential impact on historical and cultural resources considered eligible for inclusion in the NRHP. A field survey of the proposed routes has occurred to identify archaeological resources that may occur in the transmission line corridors. Mitigation to known historical and cultural sites within the transmission line corridors will generally be through avoidance. All sites along the transmission line corridors can be avoided.

On the EREF site, Site MW004 (identified in the EREF Cultural Resources Studies) is in the location of the Twin Buttes Substation. AES will develop a treatment plan for Site MW004 in conjunction with the Idaho SHPO, and mitigation measures for Site MW004 will be stipulated. The treatment of Site MW004 will occur prior to any construction activities in that location, or Site MW004 will be marked along with a

suitable buffer zone so that construction activities do not impact this site. Refer to the EREF ER Section 4.8 for additional information regarding Site MW004.

In the event that any inadvertent discovery of human remains or other items of archeological significance is made during construction, construction activities will immediately cease in the area around the discovery and the Idaho SHPO will be notified to make the determination of appropriate measures to identify, evaluate, and treat these discoveries. RMP will provide an Unanticipated Discoveries Plan and will communicate these requirements to construction workers, including contractors, prior to commencement of construction, and for any new personnel that join the construction team prior to their involvement in construction activities.

Additional mitigation measures for impacted resources are discussed in Chapter 4 and listed in Table H-3.

2.5 Project Siting Alternatives

A number of alternative transmission line routes were considered by RMP that took into account existing substation locations, the need for a dual redundant electrical supply, the magnitude of the load requirements, and the system impact of 39 MVA, and ultimately of 78 MVA, of new load on electrical capacity in the area. As a result of these studies, four transmission route options were identified. Two of these routes, Transmission Route Option 3 and 4 were subsequently dismissed, for reasons described below, and two routes, Transmission Route Option 1 and 2, were carried forward for detailed environmental analysis. Each of the routes carried forward was analyzed using several criteria (described below and in Chapter 3), field studies were carried out, and contacts were made with potentially affected landowners and with other interested parties to identify the routes which best balanced the purpose and need for the project with resource impacts.

2.5.1 Transmission Route Option 1

The first transmission line route to provide the necessary dual source feed would be to construct a 161-kV line originating at the existing RMP Bonneville Substation, then proceeding west along the existing county road (West 65 North Street) to the existing RMP Kettle Substation, a distance of approximately 14.5 km (9 mi), continuing west to the eastern portion of the EREF site, a distance of 1.2 km (0.75 mi), then north within the EREF site to its northern end, then west and south to the new RMP Twin Buttes Substation, a distance of approximately 6.4 km (4 mi). This eastern power source would involve a 14.5 km (9 mi) rebuild of the existing 69-kV line between the Bonneville Substation and the Kettle Substation to include a double-circuit line with one side energized at 69-kV and the other side energized at 161-kV, with a 25-kV underbuild.

For the western power source, a new single-circuit 161-kV tie would extend south from the existing RMP Antelope Substation in Butte County, Idaho, to U.S. Highway 20, then extend east along the existing U.S. Highway 20 corridor through portions of Butte, Bingham, and Bonneville Counties to the EREF site, a distance of approximately 43.5 km (27 mi), then extend north within the EREF site to the new RMP Twin Buttes Substation, a distance of approximately 3.4 km (2.1 mi) (Figure H-1).

The 161-kV point of service at the EREF, designated Twin Buttes Substation, would be constructed as described in Section 2.4.1, and modifications to the Antelope and Bonneville Substations would be required as described in Section 2.4.1.

Transmission Route Option 1 requires significant substation modification at two existing locations and a total of 69 km (42.9 mi) of transmission line construction, including 14.5 km (9 mi) of double circuit with underbuild. Line access for maintenance and emergency repairs is good due to the close proximity to

U.S. Highway 20 and county roads. Line routes are completely separated east to west and fed from two separate delivery points to fulfill the dual redundant feed criterion. This route, from the east, would affect private landholders, but would not affect existing irrigation systems on agricultural land. This transmission route option was carried forward for detailed analysis including field surveys of the proposed transmission line routes.

2.5.2 Transmission Route Option 2

The second transmission line route to provide the necessary dual source feed would be to construct a single-circuit 161-kV line originating at the existing Bonneville Substation. This eastern power source would extend south 3.9 km (2.4 mi) to U.S. Highway 20, then west along the existing U.S. Highway 20 corridor to the eastern portion of the EREF site, a distance of approximately 16.1 km (10 mi), then north within the EREF site to its northern end, then west and south to the new RMP Twin Buttes Substation, for a distance of approximately 6.4 km (4 mi).

For the western power source, a new single-circuit 161-kV tie would extend south from the existing RMP Antelope Substation in Butte County, Idaho, to U.S. Highway 20, then extend east along the existing U.S. Highway 20 corridor through portions of Butte, Bingham, and Bonneville Counties to the EREF site, a distance of approximately 43 km (27 mi), then extend north within the EREF site to the new RMP Twin Buttes Substation for a distance of approximately 3.4 km (2.1 mi) (Figure H-1). This western power source is the same for Transmission Route Option 1.

The 161-kV point of service at the EREF, designated Twin Buttes Substation, would be constructed as described in Section 2.4.1, and modifications to the Antelope and Bonneville Substations would be required as described in Section 2.4.1.

Transmission Route Option 2 requires significant substation modification at two existing locations and is the greatest length of any of the transmission route options with a total of 73.3 km (45.5 mi) of transmission line construction. Line access for maintenance and emergency repairs is good due to the close proximity to U.S. Highway 20 and county roads. Line routes are completely separated east to west and fed from two separate delivery points to fulfill the dual redundant feed criterion. This route from the east would affect private landholders and would interfere with some existing irrigation systems on agricultural land along the route. Pole placement would be at locations to minimize interference with existing irrigation systems on agricultural land. This transmission route option was carried forward for detailed analysis including field surveys of the proposed route.

2.5.3 Transmission Route Option 3

The first source would be either one of the eastern options described above for Transmission Route Options 1 and 2 to connect the existing Bonneville Substation to the Twin Buttes Substation. This source would either be 1) a double-circuit 161/69-kV line with a 25-kV underbuild originating at the Bonneville Substation, then proceeding west along the existing county road (West 65 North Street) to the Kettle Substation, a distance of approximately 14.5 km (9 mi), then a single-circuit 161-kV line west to the eastern portion of the EREF site, a distance of approximately 1.2 km (0.75 mi), then north within the EREF site to its northern end, then west and south to the new RMP Twin Buttes Substation, for a distance of approximately 6.4 km (4 mi); or 2) a single-circuit 161-kV line originating at the existing Bonneville Substation, extending south 3.9 km (2.4 mi) to U.S. Highway 20, then west along the existing U.S. Highway 20 corridor to the eastern portion of the EREF site, a distance of approximately 16.1 km (10 mi), then north within the EREF site to its northern end, then west and south to the new RMP Twin Buttes Substation, for a distance of approximately 6.4 km (4 mi).

For the second source, a new double-circuit 161-kV line extending approximately 22.5 km (14 mi) south from the EREF site to intercept the existing Goshen–Antelope Transmission Line (Figure H-1, one of the two red dashed lines), is required.

The 161-kV point of service at the EREF, designated Twin Buttes Substation, would be constructed as described in Section 2.4.1, and modifications to the Bonneville Substation would be required as described in Section 2.4.1.

Transmission Route Option 3 requires significant substation modification at one existing location and a more complex installation at the Twin Buttes Substation. This option requires a total of 44.6 to 48.9 km (27.75 to 30.4 mi) of transmission line construction, depending on which eastern route is selected, and line routes are completely separated east to west and fed from two separate delivery points to fulfill the dual redundant feed criterion. However, line access for maintenance and emergency repairs is limited on the tap line to the Goshen–Antelope Transmission Line as this route traverses undeveloped land including existing lava flows. This option would require 22.5 km (14 mi) of new road across undeveloped land and would require some blasting to create a road through existing lava fields. This option would also impact the BLM's Hell's Half Acre hiking area and would require crossing U.S. Highway 20. For these reasons, this transmission route option was undesirable and was not carried forward for detailed analysis. (PacifiCorp, 2008)

2.5.4 Transmission Route Option 4

This transmission line route would be to construct two separate 161-kV line extensions originating approximately 22.5 km (14 mi) south of the EREF site by intercepting the existing Goshen–Antelope Transmission Line and extending north (Figure H-1, both of the two red dashed lines). These lines would need to be separated and not built in the same right-of-way as to provide some level of protection from damage to both lines from a single event.

The Twin Buttes Substation would be constructed utilizing four 161-kV circuit breakers in a ring bus configuration with associated switches, relaying, SCADA, revenue metering, revenue metering, and other necessary electrical equipment.

Transmission Route Option 4 would require no significant substation modification other than construction of the Twin Buttes Substation. This option requires 45 km (28 mi) of transmission line construction separated by a reasonable distance. Line access for maintenance and emergency repairs is limited on the tap line to the Goshen–Antelope Transmission Line as this route traverses undeveloped land including existing lava flows. This option would require 45 km (28 mi) of new road across undeveloped land and would require some blasting to create a road through existing lava fields. This option would also impact the BLM's Hell's Half Acre hiking area and would require crossing U.S. Highway 20. Additionally, because line routes are virtually parallel, even though they are separated by some distance, both lines may be susceptible to service outages caused by grassland fires or extreme winds and do not meet the dual redundant feed criterion. For these reasons, this transmission route option was undesirable and was not carried forward for detailed analysis. (PacifiCorp, 2008)

3 AFFECTED ENVIRONMENT

A number or resources were considered in the analysis for this ER, some of which pertain specifically to BLM resources of concern. Many of these were determined to be absent from the transmission line project area and as a result are not discussed further in this document. These include Areas of Critical Environmental Concern; Floodplains; Fisheries; Forest Resources; Wetland and Riparian Zones; Wild and Scenic Rivers; Wild Horse and Burro Herd Management Areas; and Wilderness.

Other resources were determined to be present in the area but will not be impacted by the proposed activities. These include Economic and Social Values; Mineral Resources; Native American Religious Concerns; Paleontological Resources; and Recreation Use. The Proposed Action is consistent with the prevalent economic and social values of the area. Although minor short-term beneficial impacts on the local economy may occur because of construction activities, the magnitude of these effects would not be significant. The Proposed Action will affect surface soils along the access points and rights-of-way, but there are no mineral resources present in the project area that will be affected by the construction, operation, or maintenance activities associated with the proposed transmission lines. There are no known Native American ceremonial sites or religious resources present in the project area that will be affected by the Proposed Action. Consultation with the Shoshone-Bannock Tribes has occurred. There are no known paleontological resources located in the project area. Paleontological resources in this region are generally limited to caves associated with lava flows. No caves were located along the proposed transmission line routes. The nearest known paleontological resources are associated with the Wasden Cave Complex, located approximately 1.0 km (0.6 mi) from the northeast boundary of the EREF site. The Proposed Action will not affect recreational uses that occur in the area, since the primary recreational uses in the area include hiking trails that are on the south side of U.S. Highway 20. In addition, BLM-managed public lands in the project area are closed to the public because of their affiliation with INL. These resources also will not be discussed further in this document.

Resources that may be present in the project area are described below and potential impacts that may result from implementation of the Proposed Action are described in Chapter 4. These include Access; Air Quality; Cultural Resources; Environmental Justice; Existing and Potential Land Uses; Invasive, Non-native Plant Species; Migratory Birds; Soil Resources; Threatened, Endangered, and Sensitive Plants; Threatened, Endangered, and Sensitive Animals; Tribal Treaty Rights; General Vegetation; Visual Resources; Wastes, Hazardous and Solid; Water Quality, Surface and Ground; and General Wildlife.

3.1 Access

The proposed transmission line routes would be accessed primarily by U.S. Highway 20, as described in Section 2.4.1. For the most part, vehicles would use existing roads to gain access to the transmission line rights-of-way. Where roads do not exist, overland travel would occur along the proposed centerline for construction and maintenance of the transmission lines. Lands along the proposed Transmission Route Options 1 and 2 include BLM-administered and managed lands, state lands, and private lands.

Installation of the eastern power source – from the Bonneville Substation to the Twin Buttes Substation – would require the following rights-of way or easements for Transmission Route Option 1: 21.7 km (13.5 mi) on private lands (including 6.4 km [4.0 mi] on AES property) and 0.4 km (0.25 mi) on BLM-managed lands. Most of this length would be accessed from the existing county road (West 65 North Street). For Transmission Route Option 2 the following rights-of-way or easements would be required for the eastern power source: 26.0 km (16.2 mi) on private lands (including 6.4 km [4 mi] on AES property) and 0.4 km (0.25 mi) on BLM-managed lands. Most of this length would be accessed from the existing two-track county road or U.S. Highway 20.

Installation of the western power source – from the Antelope Substation to the Twin Buttes Substation – would be the same for Transmission Route Options 1 and 2 and would require the following rights-of-way or easements: 39 km (24.25 mi) on BLM administered or managed lands, 1.6 km (1.0 mi) on state lands, and 6.2 km (3.85 mi) on private lands (including 3.4 km [2.1 mi] on AES property. Approximately 26.5 km (16.5 mi) of this portion of the route would be on the INL.

3.2 Air Quality

The Clean Air Act of 1970 (USC 2009h) established NAAQS for the control of criteria air pollutants to protect human health and the environment, and to prevent adverse effects to national air resources. The major pollutants of concern or "criteria pollutants" are carbon monoxide (CO), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), ozone (O_3), suspended particulate matter less than 10 microns (PM_{10}), and lead. Areas that do not meet the standards set for these pollutants are called "non-attainment" areas. IDEQ monitors air quality using the Air Quality Index (AQI) for five of these air pollutants (all but lead) (IDEQ, 2009a). The nearest air quality monitoring location to the proposed transmission line corridors is located in Idaho Falls. The AQI category at this monitoring site is typically "good" (IDEQ, 2009a), with seasonal fluctuations caused by increases in dust associated with agricultural activities and increases in particulate matter associated with wildfires and seasonal use of wood burning stoves at residential properties in the area.

In addition to requirements under Section 176(c), General Conformity, of the Clean Air Act, the EPA's prevention of significant deterioration (PSD) program is designed to keep an attainment area in continued compliance with NAAQS. For actions in attainment areas, PSD Program approval would be required if the action includes a new major stationary source (generating more than 250 tons per year) or major modification to an existing major source (40 CFR 52.21). Mobile emission sources, such as vehicular and construction equipment emissions, and blowing dust are the primary contributors to air pollutant emissions along the proposed transmission line routes.

3.3 Cultural Resources

The Snake River Plain has been an area of human occupation by hunter and gathering populations for at least the past 12,000 to 15,000 years. Within southeastern Idaho, the prehistoric cultural chronology is organized into three major periods: Early Prehistoric (15,000-7,500 Before Present [B.P.]), Middle Prehistoric (7,500-1,300 B.P.), and Late Prehistoric (1,300-300 B.P.). The Protohistoric Period (300-150 B.P.) began with the presence of European trade goods in archaeological assemblages. The Euro-American presence in the area dates from the early 1800s.

A file search was conducted by the Idaho SHPO for previous projects that have occurred within 1.6 km (1 mi) of the proposed transmission centerline. INL archaeologists also provided the results of studies that have occurred on the INL. Thirty-seven (37) previous cultural resource projects have occurred in the vicinity of the proposed transmission routes. These projects have recorded a total of 252 sites within 1.6 km (1 mi) of the project area. These projects are listed in Table H-4.

The majority of the previously recorded cultural properties consist of isolated artifacts (n = 108), followed by buildings (n = 64), lithic scatters (n = 48), prehistoric open camps (n = 11), multi-component sites (sites containing both a prehistoric and historic component) and trash scatters (n = 5 each), historic trails and can scatters (n = 2 each), and one canal, lumber scatter, and farm equipment.

One-hundred fifty-seven (157) of the previously recorded components (each component of a multi-component site is evaluated separately) are not eligible for inclusion on the NRHP; 81 of the components are eligible or potentially eligible for inclusion on the NRHP; five are unevaluated for the NRHP; and nine have been destroyed through prior construction activities.

Thirteen (13) new cultural resources were recorded as a result of the inventories conducted for this project. In addition, three previously recorded sites were located and re-recorded, and two previously recorded sites were not relocated. The thirteen newly-recorded sites consist of lithic scatters (n = 2), trash dumps (n = 3), trash scatters (n = 2), and an isolate, concrete footing, landfill, multi-component

site, telephone line, and a highway (n = 1 each). Seven (7) of the thirteen (13) components are considered as potentially eligible for inclusion on the NRHP.

Additional details concerning the archaeological survey, including methods and a full description of the resources, are contained in the report that has been prepared and will be submitted to the Idaho SHPO. A separate archaeological survey was performed for the EREF Area of Disturbance. The results of that study and mitigation measures that will be implemented for sites on the EREF, are identified in the report prepared for that project (refer to the EREF ER Sections 3.8 and 4.8, and the Class III Cultural Resource Inventory Report of the Proposed Eagle Rock Enrichment Facility, Bonneville County, Idaho, prepared for the EREF ER).

3.4 Environmental Justice

NEPA (42 USC Section 4321–4347) requires that all actions sponsored, funded, permitted, or approved by federal agencies undergo planning to ensure that considerations such as environmental justice are given due weight in project decision-making. Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, signed by the President on February 11, 1994, directs federal agencies to take appropriate and necessary steps to identify and address disproportionately high and adverse effects of Federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law.

The Council on Environmental Quality (CEQ) and EPA have provided suggestions and guidance for addressing environmental justice issues under NEPA (CEQ, 1997; EPA, 1998). The guidelines provided by the CEQ and EPA indicated that a minority community may be defined as either: 1) where the minority population comprises more than 50 percent of the total population, or 2) where the minority population of the affected area is meaningfully greater than the minority population in the general population of an appropriate benchmark region used for comparison. Minority communities may consist of a group of individuals living in geographic proximity to one another, or a geographically dispersed set of individuals who experience common conditions of environmental effect. Communities sensitive to unjustly high health and environmental impacts are primarily areas in which over 50 percent of the population are minorities and low-income populations.

The populations of Bingham, Bonneville, and Butte Counties are predominantly non-Hispanic white, comprising approximately 76 percent of the total population in Bingham County, 87 percent of the total population in Bonneville County, and 92 percent of the total population in Butte County, of the estimated 2008 populations in these counties. Hispanic or Latinos were the largest minority group comprising 16 percent of the total population in Bingham County, 10 percent of the total population in Bonneville, and 6 percent of the total population in Butte County (USCB, 2009). None of the potentially affected counties have minority populations that exceed 50 percent of the total population. As a result, none of these areas meet the definition of a "minority community" based on the criteria that the minority population comprises more than 50 percent of the total population.

The percent of the population below the poverty level in Bonneville, Bingham, and Butte Counties in 2007 was 10.8; 12.8, and 16 percent respectively. The percent of the population below the poverty level in Idaho in 2007 was lower than the national average (12.1 percent versus 13.0 percent) (USCB, 2009). The percent of the population below the poverty level was well below 50 percent in all cases. As a result, none of these areas meet the definition of a "low-income community" based on the criteria that 50 percent of the population be below the poverty level.

3.5 Existing and Potential Land Uses

The general geographic area consists primarily of private agricultural lands and rangelands and grasslands associated with BLM-administered lands (including BLM-managed public lands associated with INL). Topography within the project area consists of flat plains and agricultural lands with some rolling hills and lava outcrops. Portions of the proposed transmission line routes are being used as agricultural crop fields to raise small grains, potatoes, and alfalfa. Small parcels of land located primarily on the eastern end of the proposed transmission line routes are used for single family residential homes (one on Transmission Route Option 1 from Bonneville Substation [northern route], and three on Transmission Route Option 2 from Bonneville Substation adjacent to U.S. Highway 20 [southern route]) or for agricultural related facilities (i.e., potato cellars, shops, grain silos, and other related outbuildings).

Much of the land on the western portion of the proposed routes is undeveloped rangeland. There are two BLM-managed grazing allotments – Twin Buttes Allotment and the Croft Allotment – within the proposed west transmission line location. Parcels of private land on the western portion are also used for livestock grazing. The BLM-administered grazing permits are for the areas directly adjacent to the INL boundaries; federal lands within the boundaries of the INL are closed to grazing.

The Twin Buttes Allotment is authorized for annual use by sheep by multiple operators from April 15 to June 30 and from November 15 to February 28 (BLM, 2009a). The Twin Butte Allotment is currently authorized for 15,953 animal unit months (AUMs). The Croft Allotment consists of 30 percent BLM-managed lands and is permitted for annual use by 115 cattle from April 1 to May 30. The allotment is authorized for 68 AUMs (BLM, 2009a). Within the west transmission line corridor there are a few locations where livestock grazing, primarily cattle, occurs on privately owned lands. Grazing on private land usually occurs during the early spring and late fall months.

3.6 Invasive, Non-native Species

Non-native species, also referred to as exotic or invasive, are not a natural component of the ecosystem. Executive Order 13122, Invasive Species, states that federal agencies are to prevent the introduction of invasive species, provide for their control, provide for restoration of native species and habitat conditions in ecosystems that have been invaded, and minimize the economic, ecological, and human health impacts that invasive species cause. Plants are considered invasive if they have been introduced into an environment where they did not evolve. As a result, these introduced species usually have no natural enemies to limit their reproduction and spread. Some invasive plants can produce significant changes to vegetation, composition, structure, or ecosystem function (BLM, 2009b).

Some invasive weeds have been designated "noxious" by law. Noxious weed is a legal term, meaning any plant officially designated by a federal, state, or local agency as injurious to public health, agriculture, recreation, wildife, or property (Shelley and Petroff, 1999). Of the hundreds of weed species in Idaho, 57 have been designated noxious by Idaho law (IASCD, 2009).

Disturbed areas throughout the proposed transmission line corridors contain common invasive weed species; however their presence is limited overall. These species include Russian thistle (*Salsola kali*), kochia (*Kochia scoparia*), cheatgrass (*Bromus tectorum*), and peppergrass (*Lepidium* sp.). These species are found along roadsides, in the corners of agricultural fields that do not receive water from center pivot irrigation systems, and in other areas where disturbance has occurred. State-listed noxious weeds such as Canada thistle (*Cirsium arvense*) and musk thistle (*Cirsium vulgare*) are also present within disturbed sites. These species are found in areas that tend to have more moisture such as depressions and roadside areas with existing culverts.

3.7 Migratory Birds

There are more than 800 species of birds that occur regularly in North America, of which approximately 270 can be found in Idaho at one time or another throughout the year. Most of these birds regularly breed in Idaho (243 species), whereas a handful occur in the state only in the winter or during migration (IDFG, 2009a). Approximately half of Idaho's breeding bird species are considered migrants (i.e. they come to Idaho only to nest and raise their young). These species may spend their winters in states to the south (e.g., California, Arizona, or Texas) or may travel considerable distances to countries in Central and South America during annual migrations. Species traveling south of the U.S./Mexico border are called Neotropical migratory birds and are of particular interest to ornithologists because so many of them are experiencing significant population declines. Due to these declines, a number of Idaho's birds have been classified as priority species and are ranked as Species of Greatest Conservation Need by the IDFG's new Comprehensive Wildlife Conservation Strategy (IDFG, 2009a). These species are also protected by the Migratory Bird Treaty Act of 1918, as amended.

Sagebrush steppe habitats that are present within the transmission line corridors provide suitable breeding, nesting, roosting, and foraging/hunting habitat for migratory bird species that are managed under the State of Idaho Comprehensive Wildlife Conservation Strategy and protected under the Migratory Bird Treaty Act. Some of the migratory bird species that are anticipated to seasonally use sagebrush habitat within the transmission line corridors include: sage thrasher (*Oreoscoptes montanus*), sage sparrow (*Amphispiza belli*), Brewer's sparrow (*Spizella breweri*), and Swainson's hawk (*Buteo swainsoni*).

3.8 Soil Resources

The proposed transmission line corridors lie within the Snake River Plain volcanic field. Most of the Eastern Snake River Plain, which encompasses the project area, is covered with basaltic materials; sedimentary deposits are interspersed throughout the basalt flows. The U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) Web Soil Survey (NRCS, 2009) was reviewed to identify soil associations found within the proposed transmission line corridors. The NRCS has mapped 13 soil types within the transmission line corridors (Table H-5). Two of these soils are identified as miscellaneous areas (Map Unit 17–Lava flows and Map Unit 32–Pits) and two of the soil types (Map Unit 26 – Pancheri Rock and Map Unit 33 – Polatis Rock) contain rock outcrops as a major component of the soil complex.

Characteristics of the soil types present in the project area were reviewed to determine the potential for effects from construction of the proposed transmission lines. These soils have a slight to moderate risk of erosion caused by wind. The majority of the soils within the transmission line corridors have a moderate to severe hazard of erosion when used as roads or trails. None of the soils are identified as having hydric characteristics. Parent material varies for the soil units present in the project area and include loess, loess over bedrock derived from basalt, mixed alluvium, mixed alluvium over bedrock derived from volcanic rock, and mixed alluvium over bedrock derived from volcanic basalt (NRCS, 2009).

The Pancheri and Polatis soils are found extensively in the loess covered lava plains of southeastern Idaho. The Pancheri series consists of deep and very deep, well drained soils and the Polatis series consist of moderately deep, well drained soils. Both soils have medium or slow runoff and moderate permeability. The other soils found in the project area are moderately extensive throughout southeast Idaho.

The Nargon series consist of moderately deep, well drained soils that formed in alluvium from loess and basalt on lava plains. These soils are well drained with slow to rapid runoff and moderately slow permeability.

The Coffee series consist of deep, well drained soils that formed in alluvium from loess underlain by basalt. These soils are found on basalt plains and are well drained with slow to moderate runoff and moderate permeability.

The Atom series consist of very deep, well drained soils that formed in mixed alluvium overlying basalt. These soils are found on lava plains, terraces, and alluvial fans. They are well drained with slow to rapid runoff and moderately slow permeability.

The Deuce series consist of shallow, well drained soils that formed in loess and silty alluvium overlying basalt. These soils are found on lava plains and crater rims. They are well drained with slow to very rapid runoff and moderately slow permeability.

The Menan series consist of very deep, well drained soils that formed in mixed alluvium. These soils are found in basins on lava plains. They are well drained with very slow to slow runoff and moderately slow permeability.

The Pancheri and Polatis soils are appropriate for cultivation under irrigation for hay, pasture, potatoes, sugar beets, and small grain. The principal native plants found on the Pancheri and Polatis soils are big sagebrush (*Artemisia tridentata*), bluebunch wheatgrass (*Pseudoroegneria spicata*), Sandberg bluegrass (*Poa secunda*), rabbitbrush (*Chrysothamnus* spp.), Indian ricegrass (*Achnatherum hymenoides*), and a variety of forbs. The other soil types found in the project area are appropriate for use primarily as rangeland and for wildlife habitat. Vegetation on these other soils is mainly Wyoming big sagebrush (*Artemisia tridentata* ssp.*wyomingensis*) and bluebunch wheatgrass with basin big sagebrush (*Artemisia tridentata* ssp. *tridentata*) and basin wildrye (*Leymus cinereus*) found to a lesser degree. Crested wheatgrass (*Agropyron cristatum*) is common throughout the project area where it has been planted following wildfires (see Section 3.12).

Prime and unique farmlands are a special classification of soils identified by the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS). The NRCS is responsible for the preservation of prime or unique farmlands as outlined in the Farmland Protection Policy Act. The Act assures that, to the extent possible, federal programs are administered to be compatible with states, local units of government, and private programs and policies to protect farmland. This Act is intended to minimize the impact federal programs have on the unnecessary and irreversible conversion of farmland to nonagricultural uses. Prime farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, oilseed, and other agricultural crops with minimum inputs of fuel, fertilizer, pesticides, and labor and without intolerable soil erosion. Prime farmland has the soil quality, growing season, and moisture supply needed to produce economically sustained high yields of crops when treated and managed according to acceptable farming methods, including water management. In general, the characteristics of prime farmlands include having an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks.

The NRCS Web Soil Survey (NRCS, 2009) was reviewed to identify soil types within the proposed transmission line corridors that are classified as prime and unique farmlands. The NRCS has designated three soil types that occur within the proposed transmission line corridors as prime farmland if irrigated (NRCS, 2009). The eastern third of the project area contains agricultural crop lands comprised of these soil types that are currently irrigated using center-pivot irrigation systems. These soil types are Pancheri

silt loam, 0 to 2 percent slopes; Pancheri silt loam, 2 to 4 percent slopes; and Menan silt loam, 0 to 2 percent slopes. Existing transmission lines, which parallel U.S. Highway 20 and West 65 North Street, are present in the portion of the project area that contain these soils. The soils within the rest of the project area are not irrigated and therefore do not meet the criteria for designation as prime farmland.

3.9 Threatened, Endangered, and Sensitive Plants

There is one ESA-listed species (Ute ladies'-tresses (*Spiranthes diluvialis*)) that has been identified as occurring within the project area (USFWS, 2009). Populations of the Ute ladies'-tresses have been identified within riparian corridors and wetland habitat along the banks of the South Fork Snake River in central and eastern Bonneville County. The proposed transmission line corridors do not contain any riparian or wetland habitat which would provide suitable habitat for the Ute ladies'-tresses.

Twenty-three (23) other plant species occur in Bonneville, Bingham, and Butte Counties (one, meadow milkvetch (*Astragalus diversifolius)*, occurring in two separate counties) that are state or BLM-listed species of concern (Table H-6). The majority of these species occur in moist areas or areas associated with alpine or coniferous forests. Based on the known habitat associations for these species, the transmission line corridors associated with the Proposed Action only contains suitable habitat for one of the 22 species. Spreading gilia (*Gilia polycladon*) is found in dry, open areas in desert shrub communities of shadscale saltbrush (*Atriplex confertifolia*), horsebrush (*Tetradymia canescens*), and sagebrush on sandy to silty soils (BLM, 2009c).

In 1984 Cholewa and Henderson reported that only a few locations are known for spreading gilia, on the INL and on National Forest System land to the northwest, over 32 km (20 mi) from the project area. All of the known locations are on rocky slopes of volcanic or limestone origin. The plant communities associated with known locations at the time of that survey were dominated by low sage (*Artemisia arbuscula*) and Colorado wildrye (*Leymus ambiguous*) (Cholewa and Henderson, 1984). During the October and November 2009 field surveys of the proposed transmission line corridors, no habitat containing rocky slopes of volcanic or limestone origin was observed within the transmission line corridors.

3.10 Threatened, Endangered, and Sensitive Animals

This section assesses potential impacts to terrestrial animal species that may occur from the installation of the proposed transmission lines and substation. Due to the lack of water within the transmission line corridors, fisheries species were not assessed. The terrestrial species analyzed include ESA-listed species; Species of Greatest Conservation Need, identified by the State of Idaho Department of Fish and Game (state-listed species); and BLM special status species (Types 2 through 4).

ESA-listed species include those that have been designated as threatened, endangered, or candidate species by the USFWS or the National Oceanic and Atmospheric Administration (NOAA) Fisheries. These species are afforded protection under the ESA of 1973, as amended, to prevent these species from being further impacted by actions that would potentially result in the loss of habitat or direct loss of individuals (i.e. take). Classification of these species include: endangered, threatened, experimental non-essential populations, proposed, and candidate. Definitions of these ranking are as follows (IDFG, 2005):

- Endangered: Species in danger of extinction throughout all or a significant portion of its range.
- Threatened: Species likely to become endangered within the foreseeable future throughout all or a significant portion of its range.

- Experimental Population, Non–essential: A population (including its offspring) of a listed species designated by rule (published in the Federal Register) that is wholly separate geographically from other populations of the same species. An experimental population may be subject to less stringent prohibitions than are applied to the remainder of the species to which it belongs. An experimental "non–essential" population is a population whose loss would not appreciably reduce the prospect of survival of the species in the wild.
- Proposed: Species proposed in the Federal Register to be listed as endangered or threatened under Section 4 of the ESA.
- Candidate: Species for which USFWS or NOAA Fisheries has on file sufficient information on biological vulnerability and threats to support a proposal to list as endangered or threatened.

The State of Idaho has developed a Comprehensive Wildlife Conservation Strategy that presents a list of 229 wildlife species that have been designated as Species of Greatest Conservation Need (IDFG, 2005). These species are those that have been ranked by the state as S1 through S4, or other state rankings. Definitions of these rankings are as follows:

- S1: Critically Imperiled: At high risk because of extreme rarity (often five or fewer occurrences), rapidly declining numbers, or other factors that make it particularly vulnerable to rangewide extinction or extirpation.
- S2: Imperiled: at risk because of restricted range, few populations (often 20 or fewer), rapidly declining numbers, or other factors that make it vulnerable to rangewide extinction or extirpation.
- S3: Vulnerable: At moderate risk because of restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors that make it vulnerable to rangewide extinction or extirpation.
- S4: Apparently Secure: Uncommon but not rare; some cause for long-term concern due to declines or other factors.

The list of Species of Greatest Conservation Need was analyzed and narrowed down to reflect the species that occur within the general geographic area and occur in habitat types present within or adjacent to the project corridors. Those species that receive protection under the ESA are addressed under the federally-listed species, and not addressed as state-listed species. The species that have the potential to occur within or adjacent to the project area which have been identified by the state as having conservation needs include: 4 mammals, 10 birds, and 1 insect.

The BLM has specific designations for special status species that occur on BLM-managed public lands. The BLM has the capability to affect the conservation status of the species through management on these lands. The BLM has five designations for these species, which include:

- Type 1: Threatened, Endangered, Proposed, and Candidate: Species listed by the USFWS or NOAA Fisheries as threatened, endangered, proposed, or candidates for listing under the ESA of 1973.
- Type 2: Rangewide/Globally Imperiled: Species experiencing significant declines throughout their range, with a high likelihood of being listed (under the ESA) in the foreseeable future due to their rarity and/or significant endangerment factors.
- Type 3: Regional/ State Imperiled: Species experiencing significant declines in population or habitat and are in danger of regional or local extinctions (in Idaho) in the foreseeable future if factors contributing to their decline continues. This includes Idaho BLM-sensitive species that (a) are not in Type 2, (b) have an S1 or S2 state rank (exception being a peripheral or disjunct

species), (c) score high (18 or greater) using the Criteria for Evaluating Animals for Sensitive Species Status, or (d) indicate significant declines in other regional/national status evaluations (e.g., Partners in Flight scores).

- Type 4: Peripheral: Species generally rare in Idaho, with the majority of their breeding range largely outside the state. This includes sensitive species that have an S1 or S2 state ranking but are peripheral species to Idaho.
- Type 5: Watch List: These species are not considered BLM-sensitive species and associated sensitive species policy guidance does not apply. Watch list species include species that may be added to the sensitive species list depending on new information concerning threats, species' biology, or statewide trends. The Watch List includes species with insufficient data on population or habitat trends or threats that are poorly understood.

In this section, Type 1 species listed under the ESA will not be discussed under BLM special status species because they are previously addressed under ESA-listed species. Type 5 species are also not discussed because these species are not considered BLM-sensitive species and associated sensitive species policy guidance does not apply. However, these species are monitored by the BLM to assess habitat impacts that could cause the species to trend toward needing management actions to prevent loss of individuals.

To assess potential impacts to wildlife species, species lists were acquired from federal and state agencies to determine which species have the potential to occur within each of the proposed transmission line corridors. A list of ESA-listed species was obtained from the USFWS, which identified those listed species that potentially occur within Bonneville, Bingham, and Butte Counties. A list of 229 wildlife species identified by the State of Idaho, which have been designated as Species of Greatest Conservation Need, was presented in the *Comprehensive Wildlife Conservation Strategy* (IDFG, 2005). This list was obtained and compared to the list of species known or suspected to occur within the BLM Idaho Falls Field Office of the Upper Snake River District, presented in the *Idaho BLM Special Status Animal Species for Districts and Field Offices* (BLM, 2003). This comparison was completed because the list of BLM special status species identifies the species that occur within a given geographic area, whereas the state list of species only identifies the species that occur in the state and does not consolidate the species in a geographic area. The comparison of the two lists narrowed the list of species to those that potentially occur or have suitable habitat within the project area.

Information presented within the Idaho Fish and Game Conservation Data Center (IDFG CDC) was reviewed to identify known occurrences of State of Idaho and federal-listed (ESA-listed) wildlife, fisheries, and plant species within or adjacent to the project area.

Field surveys of the proposed transmission line corridors were performed in October and November 2009, to identify habitat types present within the project area; sign of use by different species; and direct observation of species within the project area. All of this data was compiled to assess potential impacts to ESA-listed species, state-listed species, and BLM special status species associated with the installation of the transmission lines.

3.10.1 ESA-Listed Species

Canada lynx (*Lynx canadensis*)

Canada lynx, which is listed as endangered under the ESA, occur primarily within coniferous forest habitats. These habitat types provide dense cover used for breeding and rearing. Habitats that occur within the proposed transmission line are comprised of agricultural lands and open sagebrush/grassland habitat which does not act as suitable habitat for the Canada lynx.

Utah valvata snail (*Valvata utahensis*)

The Utah valvata snail, which is listed as endangered under the ESA, is identified as potentially occurring in Bonneville and Bingham Counties. This species is only known to occur within the Snake River and its tributaries. This type of habitat is not located within or adjacent to the project area.

Yellow-billed cuckoo (*Coccyzus americanus*)

Habitat for the yellow-billed cuckoo, a candidate species under the ESA, occurs along dense riparian areas made up of a cottonwood overstory with a dense willow understory. The IDFG CDC has identified occurrences of yellow-billed cuckoo within the Mud Lake Wildlife Management Area, approximately 37 km (23 mi) north of the proposed transmission line project area (IDFG, 2009b). There are no riparian corridors which would provide suitable habitat for the yellow-billed cuckoo within or adjacent to the project area.

3.10.2 State-Listed and BLM Special Status Species

Eight state-listed or BLM special status bird species have been identified as potentially occurring within or adjacent to habitats associated with the transmission line corridors. Each of these is discussed below. Conservation status for all of these species, except for the greater sage-grouse (*Centrocercus urophasianus*), refers to the breeding population of the species (IDFG, 2005).

Despite management and research efforts that date to the 1930s, breeding populations of greater sage-grouse have declined 17 to 47 percent throughout much of its range (Connelly et al., 2000). Greater sage-grouse are dependent on large areas of sagebrush/grassland habitats with 15 to 25 percent sagebrush canopy cover for breeding habitat and 10 to 30 percent canopy cover for winter habitat. A healthy perennial grass and forb understory is also an important component of nesting and brood-rearing habitat. The availability of a diversity of forbs rich in calcium, phosphorus, and protein are also important to pre-laying hens (Connelly et al., 2000). There are documented active and inactive greater sage-grouse lekking grounds within 3.2 km (2 mi) of the transmission line corridors (IDFG, 2009a). Greater sage-grouse are known to primarily make use of sagebrush steppe habitat; however, they commonly are found in shrub/grassland habits while foraging, with the majority of breeding and rearing taking place amongst sagebrush habitats. These characteristics define the sage-grouse as a sagebrush obligate species.

The IDFG CDC identified one sage-grouse lek within a 1.6 km (1 mi) buffer of the transmission lines in their 2009 species data. This lek is located on the south side of U.S. Highway 20 just within the INL boundaries. The location of this lek appears to be fairly new because it was not identified on the 2008 CDC database. This lek location will be surveyed in accordance the mitigation measures presented in Section 4.10.2. A sage-grouse lek survey was performed for the proposed EREF in the May 2008; during this survey no leks were identified within the bounds of the survey area (MWH, 2009). During the October and November 2009 surveys, sign of sage-grouse use (scat) was only observed south of Antelope Substation between U.S. Highway 20 and the road leading into INL. The low volume of use of habitat within the survey corridors was not unexpected due to the close proximity to U.S. Highway 20 and the limited amount of suitable sagebrush habitat within the corridors. Habitat is limited due to the frequency of fires in the area which has been frequently burned and reseeded to crested wheatgrass, resulting in an overall reduction of sagebrush habitat.

A separate survey for sagebrush habitat, sage-grouse, and other sensitive species was performed for the EREF Area of Potential Effect (refer to the EREF ER Sections 3.5 and 4.5 and the Sage Grouse Survey Report prepared for the EREF ER). Although no sage-grouse or sage-grouse sign was observed on the EREF property, one sage-grouse was observed on BLM-administered lands north of the EREF property

and a second sage-grouse was heard and feathers were found at a different location north of the EREF property.

The sagebrush habitat present within the transmission line corridors also provides suitable habitat for three raptor species, which are designated as BLM special status species. These species are the prairie falcon (*Falco mexicanus*), northern goshawk (*Accipiter gentilis*), and ferruginous hawk (*Buteo regalis*) (also a state-listed species). Ferruginous hawks and prairie falcons inhabit semi-arid to arid habitats on the western plains and intermountain regions. They are typically found in open country with scattered trees, primarily prairies, plains, and badlands. These species prey on small mammals, reptiles, and occasionally other small birds. Both species hunt their prey from perched locations and while in flight. Northern goshawks primarily occur in forested habitat, but are also known to use sagebrush steppe habitat periodically during migration. There are multiple documented occurrences of ferruginous hawks flying/hunting within 1.6 km (1 mi) of the transmission line corridors (IDFG, 2009a).

The project corridors provide suitable habitat for two sagebrush obligate bird species: Brewer's sparrow (*Spizella breweri*) and sage sparrow (*Amphispiza belli*). These sagebrush obligate species rely on the sagebrush shrub communities as part of their migratory habitats. Two additional bird species which are known to occur in sagebrush habitats and seasonally occur within the general geographic area include the loggerhead shrike (*Lanius ludovicianus*) and Lewis' woodpecker (*Melanerpes lewis*). All four of these species are known to use sagebrush steppe habitat as breeding, nesting, and foraging habitat.

There is potential habitat for three of the four state-listed mammals within the transmission line corridors. These species are the Townsend's big-eared bat (*Corynorhinus townsendii*), pygmy rabbit (*Brachylagus idahoensis*), and Piute ground squirrel (*Spermophilus mollis*). Townsend's big-eared bat is a species generally associated with caves and mines. The IDFG CDC has documented occurrences of the Townsend's big-eared bat within 1.6 km (1 mi) of either side of the proposed transmission line corridors (IDFG, 2009a). These occurrences are within the buildings of INL Central Facility, located beyond the western end of the west transmission line. There is limited roosting habitat and no known hibernating habitat present within the transmission line corridors for Townsend's big-eared bats. The roosting habitat occurs within fissures in the basalt rock found associated with lava outcrops. If they are found on site, individuals would be expected to be foraging or traveling between roosting and foraging areas, around dusk or twilight hours.

On January 8, 2008, the USFWS announced a 90-day finding on a petition to list the pygmy rabbit, and published a notice of petition finding and initiated a 12-month status review on the species (73 FR 5, 1312). To date, formal determination on listing of the pygmy rabbit under the ESA has not been released by the USFWS. Pygmy rabbits are a sagebrush obligate species that are known to occur on the INL, but not within 1.6 km (1 mi) of the transmission line project area (IDFG, 2009a). Pygmy rabbits require dense stands of big sagebrush for both food and cover. In southeastern Idaho, pygmy rabbit diets consist of big sagebrush throughout the year and a mixture of grasses and forms during the summer (Tesky, 1994).

Studies have indicated that pygmy rabbits prefer areas of tall, dense stands of sagebrush with deep, sandy soils (Tesky, 1994). Deep, sandy soils are important to facilitate the burrowing of the pygmy rabbit. Burrow systems are typically constructed under clumps of big sagebrush, reinforcing the vital role of sagebrush to pygmy rabbit survival (Heady et al., 2001). The sagebrush component within the transmission line corridor contains suitable habitat for the pygmy rabbits. During the October and November 2009 field surveys, multiple burrows were observed some containing common characteristics associated with pygmy rabbit activity; however, all of these types of burrows appeared to be inactive or had collapsed.

The Piute ground squirrel also occurs mainly in the high desert (sagebrush, shadscale, and greasewood). They generally occur in well-drained soils, especially embankments, often around desert springs and irrigated agricultural lands (Nature Serve, 2009). The Piute ground squirrels make extensive burrow systems. The IDFG CDC has documented occurrences of the Piute ground squirrel within 1.6 km (1 mi) of either side of the proposed transmission line corridors (IDFG, 2009a), primarily on the INL. During the project field surveys, no burrows or ground squirrel activity were observed within the transmission line corridor.

3.11 Tribal Treaty Rights

The 1868 Fort Bridger Treaty, between the United States and the Shoshone and Bannock Tribes, reserves the Tribes' right to hunt, fish, gather, and exercise other traditional uses and practices on unoccupied federal lands. In addition to these rights, the Shoshone Bannock have the right to graze tribal livestock and cut timber for tribal use on those lands of the original Fort Hall reservation that were ceded to the Federal government under the Agreement of February 5, 1898, ratified by the Act of June 6, 1900.

The federal government has a unique trust relationship with federally-recognized American Indian Tribes including the Shoshone-Bannock Tribes. BLM has a responsibility and obligation to consider and consult on potential effects to natural resources related to the Tribes' treaty rights or cultural use. Resources or issues of interest to the Tribes that could have a bearing on their traditional use and/or treaty rights include: tribal historic and archaeological sites, sacred sites and traditional cultural properties, traditional use sites, fisheries, traditional use plant and animal species, vegetation (including noxious and invasive, non-native species), air and water quality, wildlife, access to lands and continued availability of traditional resources, land status, and the visual quality of the environment.

The project area would be located on unoccupied federal lands outside of the ceded boundary. Therefore, tribal treaty rights, as defined, are applicable to the project area.

3.12 General Vegetation

The general vegetation within the transmission line corridors is made up of three primary vegetation communities: sagebrush steppe, post-fire plantings, and agricultural crop lands.

The sagebrush steppe community for the 91-m (300-ft) wide corridor surveyed along the proposed transmission line centerlines encompasses approximately 353 ha (872 ac). Sagebrush steppe covers approximately 228 ha (563 ac) within Transmission Route Option 1, and 287 ha (709 ac) within Transmission Route Option 2. Sagebrush steppe habitat within the transmission line corridor is dominated by Wyoming big sagebrush, basin big sagebrush, black sagebrush (*Artemisia nova*), and shadscale saltbrush, with an understory of perennial and annual grasses with scattered forb species. Dominant grass species which are common within the sagebrush steppe community in the project area include: crested wheatgrass, cheatgrass, Indian ricegrass, Sandberg's bluegrass, bluebunch wheatgrass, Idaho fescue (*Festuca idahoensis*), needle-and-thread grass (*Stipa comata*), bottlebrush squirreltail (*Elymus elymoides*), and thick-spiked wheatgrass (*Elymus lanceolatus*). Additional shrub species which commonly occur within sagebrush steppe communities include green rabbitbrush (*Chrysothamnus viscidiflorus*), gray rabbitbrush (*Chrysothamnus nauseosus*), winterfat (*Krascheninnikovia lanata*), three-tipped sagebrush (*Artemisia tripartita* ssp. *tripartite*) and spiny hopsage (*Grayia spinosa*). A wide variety of forb species occur within sagebrush steppe habitat. Species such as tapertip hawksbeard (*Crepis acuminate*), common yarrow (*Achillea millefolium*), desert paintbrush (*Castilleja angustifolia*), prickly phlox (*Leptodactylon pungens*) and Hood's phlox (*Phlox hoodii*) are known to occur within the transmission line corridors.

The sagebrush steppe communities have been described by NRCS as ecological site type R011BY001ID — Loamy 8-12 ARTRW8/PSSPS: State 1 (NRCS, 2009). This ecological site type has a plant community description of: Wyoming big sagebrush in the overstory with bluebunch wheatgrass dominating the understory. Thurber's needlegrass is the subdominant grass. Other significant species include Sandberg bluegrass, tapertip hawksbeard and arrowleaf balsamroot. There can be a variety of other grasses, forbs and shrubs in minor amounts.

Post-fire seeding areas are prevalent along the western sections of the proposed route and are dominated by crested wheatgrass and other grass species. These plantings cover approximately 323 ha (800 ac) of the proposed transmission line corridors. Small and large wildfires are a typical occurrence in the region (Figure H-3) with multiple fires occurring annually (INL 2008). The dominant grass in much of these areas is crested wheatgrass. Small isolated areas within the post-fire seedings have been infested with cheatgrass which has prohibited the establishment of other species. Other common grasses that can be observed within the seeded areas include bluebunch wheatgrass, Indian ricegrass, needle-and-thread grass, Idaho fescue, thick spike wheatgrass, and desert wheatgrass (*Agropyron desertorum*). The post-fire seeding communities have been described by NRCS as ecological site type R011BY001ID — Loamy 8-12 ARTRW8/PSSPS: State 3, Plant community 1.1 (NRCS, 2009).

The irrigated agricultural crop lands are located along the proposed east transmission line routes and encompass 148 ha (364 ac) of the transmission line routes. Agricultural croplands make up approximately 97 ha (240 ac) along Transmission Route Option 1 and 79 ha (196 ac) along Transmission Route Option 2. These lands are used for a variety of crop production including small grains, potatoes, and alfalfa hay. The crops that are raised within these communities vary year-to-year. Many of the crop fields are irrigated using center pivot irrigation systems which often times leave the corner areas of the fields in native vegetation or weedy areas. Some of the corner areas located along U.S. Highway 20 have been seeded in crested wheatgrass and contain scattered pockets of Wyoming big sagebrush. Based on the soil types present within the irrigated agricultural crop lands the NRCS has defined the ecological site type for these areas as R011BY001ID — Loamy 8-12 ARTRW8/PSSPS: State 1, Plant community 1.1 (NRCS, 2009).

3.13 Visual Resources

The presence of new transmission lines has the potential to impact the scenic quality of the existing rural landscape. There are no formal guidelines for managing visual resources on private or federally-administered and managed lands within the proposed transmission line corridors; therefore, a visual inventory was conducted using principles derived for the BLM Visual Resource Management (VRM) system 8400 series manuals (BLM, 1984) to assess potential impacts. The VRM methodology was employed to provide a consistent inventory process across the study area for all public and private lands. The proposed transmission lines are located within an area that has been designated as VRM Class III (BLM, 1985). A Class III rating is reserved for areas where development is evident, but does not dominate the viewshed (i.e., generally highway corridors and rural areas where the scenery is not a major resource concern). The objective of this class is to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Contrasts may attract attention but should not dominate the view of the casual observer. Any changes must repeat the basic elements of form, line, color, and texture found in the predominant natural features of the characteristic landscape (BLM, 1984). The Idaho Falls District BLM, Upper Snake Field Office is in the process of developing a new Resource Management Plan that may result in the classification of this area a Class II; however, the timing of this management decision is unknown at this time. Under Class II contrasts may be seen but should not attract the attention of the casual viewer.

Field surveys were conducted in October and November 2009, to assess the visual quality of the proposed transmission line. Prior to and during the field survey, maps of the site and surrounding area were reviewed to identify unique features in the area, viewsheds, and likely users. Most of the surrounding lands are undeveloped lands used for farming, grazing, or wildlife habitat. Some of the dominant landscape characteristics surrounding the proposed transmission lines include Kettle Butte about 3.6 km (2.25 mi) north of the proposed northern route for the east transmission line, Butterfly Butte approximately 0.6 km (0.4 mi) north of the northern route for the east transmission line, the Lemhi Range about 50 km (31 mi) north of the western end of the transmission line, East and Middle Buttes about 4 km (2.5 mi) south of the west transmission line, and Big Southern Butte which is approximately 13.4 km (8.3 miles) southwest of the west transmission line. In addition, the lava flow known as Hell's Half Acre is immediately south of the proposed EREF site on the southern side of U.S. Highway 20.

During a field assessment of the project area, a Scenic Quality Inventory and Evaluation protocol was used to rate the visual characteristics of the project area. The proposed transmission lines would be visible from traffic on U.S. Highway 20 and from adjacent properties (BLM, INL, State of Idaho, and private). The greatest majority of people viewing the corridor from these areas would be workers and suppliers traveling between Idaho Falls and the INL. The project area would also be visible to the approximately 6,000 people that annually use the Hell's Half Acre Loop Hiking Trail.

Based on guidance in the BLM VRM Manual 8431, three key observation points were chosen as vantage points to perform the assessments. The first was located at the intersection of U.S. Highway 20 and U.S. Highway 26, looking east and northwest (Figure H-4a) where vehicles would be stopped briefly and would have sustained or longer view of the project area. The second observation point was located along U.S. Highway 20 near the radio communication tower on the eastern boundary of the INL, looking northwest and west (Figure H-4b). This location was selected because it was at slightly higher elevation and thus provided an overlook of a portion of the project area. The third site was located at the Hell's Half Acre Lava Trail trailhead, looking northwest (Figure H-4c).

Photographs were taken from three key observation locations as described above. During the field assessment, rating scores were assigned to seven key factors: landform, vegetation, water, color, influence of adjacent scenery, scarcity, and cultural modifications. Characteristics such as scale, space, form, line, color, and texture were considered in assigning value ratings. Scenic quality was calculated by summing the values given to each key factor where the assessment area is assigned a scenic quality of A (19 or more), B (12-18), or C (11 or less). All three of the assessment locations received a scenic quality rating of C.

The visual sensitivity of the area was characterized by considering the type of area from which the views would occur, the duration of the exposure to the view, and the dominance of the exposure. The visual sensitivity of the project area was determined to be low to moderate. Low visual sensitivity is used to describe views from agricultural areas where the duration of the view is short and the view may be partially obscured by topography or landscaping. Moderate visual sensitivity is used to describe view from highways and local views where the duration of the view is short to moderate, many of the viewers are frequent users of the travel route, and visual sensitivity could be constrained because orientation of the viewer is focused elsewhere for much of the time.

3.14 Wastes, Hazardous and Solid

A survey for hazardous and solid wastes was performed for the proposed transmission line corridors as part of the field survey activities conducted in October and November 2009. No hazardous materials are present on the proposed routes and no properties that would affect the construction or operation of the

proposed transmission lines were identified during the survey. There is no evidence of hazardous substances, petroleum products, or recognized environmental conditions within the project corridor that would be detrimental to human health (IDEQ, 2009b). There are existing operating transmission lines in the project area along the eastern portion of Transmission Route Option 1; these would be replaced with a new double-circuit 161-kV/69-kV line with 25-kV underbuild, as described in Section 2.4.1.

Parts of the project corridors are privately owned farm land. The current and past operators of the cultivated parcels have applied chemicals for agricultural purposes. It is generally accepted that the chemicals were applied according to federally approved application rates. Several of the farmsteads also use aboveground storage tanks for fuel and chemicals. IDEQ records do not provide any evidence that spills or contamination has occurred in these locations (IDEQ, 2009b).

The Resource Conservation and Recovery Act (RCRA) regulates management and remediation of underground storage tanks (USTs). Owners of USTs that contain regulated substances such as gasoline, used oil, solvents, and pesticides are required to notify IDEQ of their existence. EPA is responsible for UST inspection and enforcement. IDEQ records show no USTs within the project corridor (IDEQ, 2009b).

RCRA also requires permits for any facility that receives hazardous wastes for treatment, storage, or disposal (TSDs). IDEQ has primacy for the RCRA program in Idaho and is responsible for issuing permits to the INL. The facilities are also regulated by the EPA under Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) regulations. None of the permitted facilities in the region are close enough to the project area to affect human health (IDEQ, 2009b). The nearest facilities occur on the INL and include the Central Facilities Area (CFA) just west of the Antelope Substation, the Advanced Reactor Area approximately 1.6 km (1 mi) north of the proposed transmission line route, and MFC approximately 4.8 km (3 mi) north of the proposed transmission line route.

There was no evidence of hazardous waste on the BLM-administered or managed lands within the project corridors. For the west line, the land east of the INL's Materials and Fuels Complex (MFC) road, situated approximately 18 km (11 mi) west of the EREF, had intermittent warning signs for unexploded ordnance (UXO). Spent shells and miscellaneous metal projectile parts were noted in this area, but no suspicious material such as trinitrotoluene (TNT) was encountered.

An undocumented historic landfill is located approximately 2.4 km (1.5 mi) south of the Bonneville Substation in a topographic depression on BLM property on the east side of the two-track road that connects U.S. Highway 20 to West 65 North Street. More recently it appears to have been used as a repository for appliances such as refrigerators, stoves, and ovens. Existing power lines span this area with poles placed in the uplands on either side of the depression. The proposed east transmission line, should Transmission Route Option 2 be selected, would also span this area.

The existing and proposed substations along the transmission routes contain some hazardous materials typical of high voltage substations. These include oil used in the voltage transformers, batteries, fuel for diesel generators, and sulfur hexafluoride (SF_6) circuit breakers.

3.15 Water Quality, Surface and Ground

The project corridors contain natural drainages throughout the alignment. Several ephemeral drainages intersect the proposed transmission line routes. None of the routes have any riparian habitat associated with them. Most of the ephemeral drainages appear to carry water in association with spring run-off, a rain-on-snow event, or during a significant rainstorm. These drainages are small in size and do not reach waters of the United States. Since there is no live water within the area of potential effect there are no water features to be avoided.

The project lies within the Eastern Snake River Plain Sole Source Aquifer. The Sole Source Aquifer (SSA) Protection Program is authorized by Section 1424(e) of the Safe Drinking Water Act of 1974, as amended (USC, 2009i). The project will not affect the water quality of the Eastern Snake River Plain SSA to the extent of creating a significant hazard to public health, since potential contaminants used in the construction and operation of the transmission lines and substations (e.g., oil, fuel, SF_6) will be small and appropriately contained. In addition, the project design and construction BMPs will prevent the introduction of contaminants into the aquifer.

3.16 General Wildlife

Based on initial field surveys for general wildlife species, information on regional and local distribution of wildlife species, and species-specific habitat preferences, the general wildlife species likely to occur along the proposed transmission line routes were identified. General wildlife species are those common species that occur throughout their designated ranges in abundance. These species are usually not provided special protection or designations, with the exception of migratory species. However, these species are analyzed to identify possible mitigations that would lessen impacts to individuals or populations to maintain population viability within an impact area.

Within the transmission line corridors, there are three main vegetation communities which define the habitat types available for wildlife species. These vegetation communities include sagebrush steppe, post-fire seedings, and agricultural cropland. The habitats associated with the sagebrush steppe communities appeared to be in good condition within and adjacent to the INL boundaries. This habitat receives little disturbance due to restriction of public access. The presence of U.S. Highway 20 and other two-track roadways have resulted in fragmentation of sagebrush habitats. The majority of the area associated with post-fire seedings was historically sagebrush steppe communities with some areas of older plantings trending toward becoming reestablished sagebrush habitat. For many of the general wildlife species in the general geographic area, this habitat type provides areas of good forage, but there is limited cover which is provided by shrub species in other habitat types. The agricultural crop lands do not provide high quality habitat for any of the general wildlife that may occur in the area. This is due to the increased rate of human presence, and routine ground disturbance associated with crop planting and harvesting. However, many different species tend to live on the fringes of agricultural lands and forage in fields, and moving back to adjacent habitats for protection.

Non-game mammal species that are suspected to occur within the project area based on habitat types which are present include predators such as coyotes (*Canis latrans*), skunk (*Mephitis mephitis*), red fox (*Vulpes vulpes*), and badgers (*Taxidea taxus*). Common rodents include Townsend's ground squirrel (*Spermophilus townsendii*), least chipmunk (*Eutamias minimus*), Ord's kangaroo rat (*Dipodomys ordii*), Great Basin pocket mouse (*Perognathus parvus*), western harvest mouse (*Reithrodontomys megalotis*), and deer mouse (*Peromyscus maniculatus*). Other mammals which potentially occur within the transmission line corridors include black-tailed jackrabbit (*Lepus californicus*), mountain cottontail (*Sylvilagus nuttallii*), pronghorn (*Antilocapra americana*), and elk (*Cervus elaphus*). Many of these species are sparsely dispersed along the transmission line corridors. Numerous burrows were observed along the transmission line corridors which varied in size with the larger being suspected to be used by badgers, mid-sized by cottontail and jackrabbits and smaller burrows being used by mice and other small rodents. Two cottontail rabbits, one coyote, and several small rodents were observed within the proposed transmission line corridor during the field surveys in October and November 2009.

The larger ungulate species (pronghorn antelope and elk) are seasonally present within the transmission line corridors during migration between summer and winter habitats. There is a population of year round pronghorn which live within the INL and are commonly observed along U.S. Highway 20. These

individuals were observed during the October and November 2009 surveys. U.S. Highway 20 which is located just south of the proposed transmission lines, as well as other county and private roads within the project area, cause habitat fragmentation which degrades wildlife habitat and also pose a potential hazard for wildlife species.

The area associated with the transmission line corridor contains habitat for a variety of bird species. Common bird species observed, or known to occur, within the project area include the American robin (*Turdus migratorius*), European starling (*Sturnus vulgaris*), western meadow lark (*Sturnella neglecta*), mourning dove (*Zenaida macroura*), brown-headed cowbird (*Molothrus ater*), horned lark (*Eremophila alpestris*), killdeer (*Charadrius vociferous*), sage thrasher (*Oreoscoptes montanus*), as well numerous other sparrows and small passerines. In addition to the raptors discussed as state-listed and BLM special status species in Section 3.10.2 above, the project area contains habitat for species such as red-tailed hawk (*Buteo jamaicensis*), rough-legged hawk (*Buteo regalis*), northern harrier (*Circus cyaneus*), American kestrel (*Falco sparverius*), common crow (*Corvus brachyrhynchos*), and an occasional golden eagle (*Aquila chrysaetos*). During the October and November 2009 field surveys, several crows and one rough-legged hawk were observed within the project corridor. There is no suitable habitat within the transmission line corridors for any waterfowl and water birds; however, seasonal migratory flocks of geese and ducks can be seen flying over the project area.

Reptile species that may be present along the project area include the western rattlesnake (*Crotalus viridis*), gopher snake (*Pituophis catenifer*), short-horned lizard (*Phrynosoma douglassi*), and sagebrush lizard (*Sceloporus graciosus*) (INL ESER, 2009). Because the occurrence of amphibian species is closely related to water and the proposed transmission line corridor contains no permanent water, no amphibian species are anticipated to occur within the corridor.

4 Environmental Impacts

4.1 Access

4.1.1 No Action

Under the No Action alternative, the transmission lines would not be constructed and no additional rights-of-way or easements would need to be acquired across private, state, or BLM managed or administered lands. The current level of access available for the general public would be maintained and access to private lands would not be altered or impacted because the transmission lines would not be constructed.

4.1.2 Proposed Action

Construction Impacts

Prior to the installation of the proposed transmission lines, legal access in the form of rights-of-way or easements will need to be obtained from both private landowners and State and federal agencies, as described in Section 2.4.1. New access points may be required at some locations in order to access the transmission line rights-of-way, as described in Section 2.4.1. Existing access points will be maintained in the same or better condition and new access points will be maintained in useable condition or will be removed and restored following construction if they were not needed for future maintenance. Referring to Table H-1 and H-2, considering the limited number of vehicles that will be utilized, traffic on U.S. Highway 20 will not be disrupted by access requirements for the transmission lines. Similarly, current land uses, including agricultural operations, will not be disrupted by access requirements although some center pivot irrigation systems may be affected (see Section 4.5.2).

For the eastern power source, the majority of the work will be performed from the shoulder of the existing county road (West 65 North Street) for Transmission Route Option 1 and access needs during construction will primarily be limited to agricultural lands near the road. Access will generally be through existing farm gates which are used to access the current 69-kV transmission line that parallels the north side of the road. The structures supporting this line will be replaced with a double-circuit 161-kV/69-kV line with 25-kV underbuild, as described in Section 2.4.1. As much as possible, the existing poles will be replaced pole for pole with the new structures. The new structures will require the existing 15.2 m [50 ft] transmission line right-of-way along West 65 North Street to be expanded by 4.6 m [15 ft] to accommodate the 161-kV single pole double-circuit with underbuild structures, but this will not require additional access points than currently exist.

If Transmission Route Option 2 is selected, the east transmission line will be accessed by an unnamed two-track road which travels north and south between U.S. Highway 20 and West 65 North Street, where it intersects with the Bonneville Substation. This two-track roadway is regularly used and is in fair condition. The remainder of this route will be accessed from points along U.S. Highway 20 and may require additional access points.

For the western power source, the entire length of the proposed transmission line route will be accessed from U.S. Highway 20 or existing private roads. The public lands on the INL are closed to the general public due to the ongoing mission of the INL, and access will be restricted to the facility and surrounding properties. RMP will coordinate access for construction of transmission facilities on INL with DOE. A number of transmission lines cross the INL and are connected at the Antelope Substation. Existing roads will be used to access this area and additional access points will not be needed. For the remainder of this route, additional access points along U.S. Highway 20 may be required in order to access the transmission line right-of-way.

Operation and Maintenance Impacts

Access will not be affected during operation and maintenance of the transmission lines. Private land owners will not be hindered by the presence of the transmission lines. Access to BLM managed and administered lands on the western portion of the project area will continue to be restricted to the public because of their association with INL and the presence of the transmission line on these properties will not alter or affect activities or access in these areas. National security issues and the on-going mission of the INL in relation to this project is currently under review by DOE, but is not expected to be compromised by construction of the west transmission line on INL property. RMP will coordinate operation, and maintenance activities of RMP transmission facilities on INL with DOE, much as they currently do for existing facilities.

4.2 Air Quality

4.2.1 No Action

Under the No Action alternative, air quality within the proposed transmission line corridor would be maintained at current levels. Seasonal fluctuations in AQI would continue to occur in association with agricultural activities and wildfires in the general geographic area. There would be no additional soil disturbing activities which would cause an increase in fugitive dust because the transmission lines would not be constructed.

4.2.2 Proposed Action

Construction Impacts

The project area is in attainment for all federally regulated air pollutants and thus a general conformity applicability analysis is not required. The proposed transmission line routes are not located within or near any non-attainment areas, maintenance areas, PSD Program Class I areas, or areas of concern (see Figure 3.6-7 in the EREF ER).

During the construction of the transmission lines, the driving of vehicles off-road, especially on any cleared areas, poses the risk of increasing fugitive dust in the project area. These impacts are anticipated to be short term and temporary (limited to the length of the construction activity) and isolated to the right-of-way areas where work is occurring. Because mitigation measures such as watering to control fugitive dust will occur as needed during construction, any increases in fugitive dust would not result in a degradation of air quality to a level that will reduce the AQI to a level which would impact human health. For further discussion, refer to Section 2.4.3. Mitigation measures are also listed in Table H-3.

Operation and Maintenance Impacts

The operation of the transmission lines will not have any impacts on air quality within the proposed transmission line corridors. The high electric field strength of the transmission lines causes a breakdown of air at the surface of conductors called corona. Corona occurs on all types of transmission lines, but it becomes more noticeable at higher voltages (345-kV and higher). When corona occurs, small amounts of ozone and oxides of nitrogen are released. These substances are released in such small quantities that they are generally too small to be measured or to have any significant impact on air quality or result in an impact on plants, animals, or human health (EPRI, 2008).

Routine and periodic maintenance will have similar impact to those discussed under the construction impacts, with maintenance activities likely resulting in a temporary and isolated increase in fugitive dust within the proposed transmission line corridors. As discussed under the construction impacts, these increases will not degrade air quality to a level that would reduce the AQI or result in a hazard to human health.

4.3 Cultural Resources

4.3.1 No Action

Under the No Action alternative, the proposed transmission lines would not be constructed; therefore no component or site would be affected and no mitigations are necessary.

4.3.2 Proposed Action

Construction Impacts

Mitigation measures for archaeological resources are included as part of the Proposed Action (see Section 2.4 and Table H-3). These measures are expected to minimize potential impacts to archaeological resources. All sites along the transmission line corridors can be avoided. RMP will have available an Unanticipated Discoveries and Monitoring Plan during construction activities.

All but one of the new and previously recorded cultural resources within the transmission line corridors occur on the western power source route (Antelope Substation to the Twin Buttes Substation). No eligible cultural resources are located along the eastern power source route for Transmission Route

Option 1, and only one is located along the eastern power source route for Transmission Route Option 2.

The site located on the eastern segment of Transmission Route Option 2 is eligible for inclusion on the NRHP. Nine components of seven of the sites on the western segment are eligible for inclusion on the NRHP. Eight components are not eligible for inclusion on the NRHP.

The eligible sites may be adversely affected by construction of the proposed power line. Direct effects to all NRHP-eligible sites or components will be avoided by selective pole placement to avoid the area and by limiting vehicular traffic and construction and maintenance activities to areas that have been surveyed for cultural resources. Indirect effects to eligible sites are related to visual impacts that may occur on NRHP-eligible sites (see Section 4.13.2). If indirect effects cannot be avoided, appropriate mitigation measures will be developed in consultation with the Idaho SHPO.

Operation and Maintenance Impacts

Periodic inspections of the transmission lines and substations will be performed from the ground. For non-emergency inspection, maintenance, and repairs, the field crews will adhere to the same precautions that will have been taken during the original construction to avoid historic and cultural resource sites (see Section 2.4.3 and Table H-3). Therefore no direct or indirect effects to cultural resources are expected from operation and maintenance activities.

4.4 Environmental Justice

4.4.1 No Action

There would be no potential for impacts to minority or low-income populations under the No Action alternative because the proposed transmission lines would not be built in the project area. No environmental justice impacts would be experienced under this alternative.

4.4.2 Proposed Action

Construction Impacts

There are no populations that meet the definition of "minority" or "low-income" in the three county area that comprises the project area. Therefore construction of the new transmission lines will not generate disproportionate and/or adverse effects on minority or low-income populations and will have no impact on environmental justice issues.

Operation and Maintenance Impacts

No minority or low-income populations have been identified that will be disproportionately or adversely impacted by the proposed project so there will be no impacts from any operation or maintenance procedures.

4.5 Existing and Potential Land Uses

4.5.1 No Action

Under the No Action alternative, RMP would not build the proposed transmission lines and the associated facilities. Therefore, there would be no potential impact to existing land uses including range resources.

4.5.2 Proposed Action

Construction Impacts

During the construction of the proposed transmission lines, there may be minimal, short-term impacts to existing land uses. To the degree possible, measures will be taken to prevent disturbance to areas used as residential properties or for agriculture. Small areas of cropland associated with pole placement may be disturbed during installation; however, crop production is not anticipated to be reduced in the area as a result of the installation of the transmission lines. The installation of the east transmission line for Alternate Route Option 2 will result in the need for some center pivot irrigation systems to be modified to accommodate the larger transmission line right-of-way along U.S. Highway 20. Steps will be implemented during the design phase of the project to reduce impacts to existing irrigation systems to the extent possible, but some poles will need to be placed in agriculture circles, inevitably affecting the center pivots.

The construction of the transmission lines may result in short-term impacts on private or BLM-managed range resources and grazing operations. The areas within the transmission line rights-of-way that support grazing may temporarily be unavailable for grazing during the construction phase of the project. These impacts may be mitigated by landowners moving livestock to pastures that are not being affected by construction activities, id livestock owners are agreeable to such action, or as feasible, RMP will limit construction to periods when livestock are not present on the allotment.

Operation and Maintenance Impacts

Once the transmission lines are operational, there will be no additional anticipated impacts to existing and potential land uses. Routine and emergency maintenance activities are not anticipated to result in further impacts to this resource.

The operation and maintenance of the transmission lines will not result in a reduction of lands open to grazing or AUMs within either of the BLM-managed grazing allotments or private grazing areas within the transmission line corridors. There will be no difference in effects from operation and maintenance of either of the potential routes.

4.6 Invasive, Non-native Species

4.6.1 No Action

Construction of the proposed transmission lines would not occur under the No Action alternative. Therefore, the establishment and risk of spread of noxious weeds and invasive species would not increase beyond those that currently exist within the project area.

4.6.2 Proposed Action

Construction Impacts

All temporary surface disturbance activities associated with construction of the transmission lines could lead to new invasions or increased rates of spread of invasive, non-native weed species. In areas where ground disturbance is substantial or where recontouring is required, such as access roads and structure foundations, aggressive non-native species could become established. Due to the small amount of disturbance that will occur at each structure site and the mitigation measures that will be employed to the revegetation of disturbed areas (see Section 2.4.3 and Table H-3), the risk of exotic species invasion is expected to be small.

Roadside weed species, such as cheatgrass, kochia, Russian thistle, and peppergrass, that are already present within the transmission line corridors are the species most likely to become established within the newly disturbed sites. However, construction activities could also result in an introduction of new species to the area. These potential impacts will be reduced by cleaning vehicles prior to them entering the project areas and reseeding disturbed areas with a native seed mix to reduce the risk of spread of invasive or noxious species (see Section 2.4.3 and Table H-3). Implementation of these mitigation measures will minimize the potential for establishment and spread of invasive species.

Operation and Maintenance Impacts

Routine operation of the transmission lines will have no effects on invasive, non-native species while maintenance activities will pose risks of spread, similar to those occurring from construction. Routine maintenance will involve use of access roads and/or ground disturbance activities that will increase the risk of transport of weedy species. Accessing the transmission line corridors in vehicles that have not been properly cleaned poses the risk of spreading undesirable invasive and non-native species to the project area. Mitigation measures for maintenance activities will be the same as those for construction activities (see Section 2.4.3 and Table H-3), and these actions will minimize the potential for spread of invasive species. There will be no difference in effects from operation and maintenance of the two analyzed routes.

4.7 Migratory Birds

4.7.1 No Action

No vegetation communities would be disturbed under the No Action alternative and no migratory bird species or their habitat would be impacted along the proposed transmission line corridors.

4.7.2 Proposed Action

Construction Impacts

Migratory bird species, including raptors, use the project area for hunting. Suitable habitat for nesting is also present in the project area although no raptor nests were identified along the project corridor. Construction activities will increase the presence of human activity in the area which could result in temporary impacts to migratory bird species. Individuals will be able to fly away from the project area during construction and return to the area following completion of the construction activities. Thus, no long term impacts to migratory bird species are anticipated. If a previously unknown raptor nest for a designated BLM special status species is documented within 1.6 km (1 mi) of the project area, seasonal stipulations may be coordinated with the BLM. Construction activity in areas containing active nests will be avoided during the nesting and fledging period (March 1 – July 15). Care will be taken during construction to limit the amount of vegetation that would be removed, especially sagebrush shrub habitat that could be used for nesting.

Operation and Maintenance Impacts

The presence of vehicles along the rights-of-way during routine inspection and maintenance activities could temporarily displace birds from the project area. However, the proposed transmission line routes are primarily along U.S. Highway 20 and the presence of a few additional vehicles for inspection and maintenance activities will not increase the level of disturbance to migratory birds that may be using the area. The mitigation measures included as part of the Proposed Action (see Section 2.4 and Table H-3) are expected to minimize potential impacts to raptors and other avian species.

4.8 Soil Resources

4.8.1 No Action

Under the No Action alternative, RMP would not build the proposed transmission lines and the associated facilities. There would be no impacts to the land within the proposed transmission line corridors and therefore, soil resources including prime farmland, would not be affected.

4.8.2 Proposed Action

Construction Impacts

Effects to the soil resource from the proposed project include increased potential for erosion and compaction by construction activities. The soils of the project area will be impacted by construction activities associated with the installation of the transmission line in areas of proposed access roads, support structure sites, construction areas, and project staging areas, as described in section 2.4.1. An increased potential for erosion and soil compaction will occur as large equipment, including trucks and cranes listed in Tables H-1 and H-2, are used to install the transmission line and substation components. Clearing of the rights-of-way, where necessary, will decrease vegetation cover and may increase erosion, and continued use of the rights-of-way by large equipment will compact soils in these areas. Information regarding site-specific conditions where access roads are planned will be used during design and construction to calculate and minimize erosion. On proposed access roads, soils will be compacted from vehicles and erosion potential could increase over the non-developed condition. In areas where slopes are mild, soil erosion impacts are expected to be small.

Standard construction BMPs will be developed by RMP for minimizing impacts on soil resources. These will include practices such as minimizing the construction footprint to the extent possible, limiting site slopes to a horizontal to vertical ratio of four to one or less, protection of undisturbed areas with silt fencing and straw bales as appropriate, and site stabilization practices such as placing crushed stone on top of disturbed soil in areas of concentrated runoff. Additional project specific BMPs may be identified before implementation of the project if conditions beyond those normally experienced are anticipated. Many of the soils within the transmission line corridors are described as being moderately to severely susceptible to erosion when used as roads or trails (NRCS, 2009). Erosion control measures included in the BMPs will also address areas where slopes are such that soil erosion is a potential concern, and areas where wind related erosion is a concern. To mitigate the risk of erosion, removal of vegetation would be limited as much as possible to reduce the amount of soils disturbed during the installation of the transmission lines. Staging and work areas will be reseeded after work is completed to lessen the risk of soil erosion by wind and water. In areas where larger ground disturbing activities will occur, fugitive dust abatement measures will be implemented. Mitigation measures for soils are described in more detail in Section 2.4.3 and Table H-3.

The proposed transmission line routes will cross soils considered to be prime farmland within the eastern sections of the project area. Along Transmission Route Option 1, the existing transmission line crosses these agricultural lands. It will be replaced by the new transmission line and much of the prime farmland soils will be spanned by the structures. Therefore, construction of the transmission lines in the soils designated as prime farmland along this route will not affect existing irrigation systems on agricultural land and will not cause impacts beyond those that currently exist. Along Transmission Route Option 2, the new transmission line will cross agricultural lands. Most of the prime farmland soils along this route will be spanned by the structures. However, for pole placements within the agricultural circle perimeters, the center pivot irrigation systems will need to be reconfigured to maneuver and water around the pole structures. Therefore, construction of the transmission line in the soils designated as

prime farmland along this route may interfere with some existing irrigation systems and cause small impacts to soil resources beyond those that currently exist.

Operation and Maintenance Impacts

Impacts to soils during routine or emergency maintenance will be similar to but of less frequency as those that will occur during installation of the transmission lines. These impacts will be limited to smaller areas where maintenance activities are occurring rather than the entire length of the transmission lines. The mitigation measures presented in Section 2.4.3 and Table H-3, and those described above for construction, will also apply for operation and maintenance of the transmission lines. Effects from operation and maintenance will be similar for either route selected.

Operation of the proposed transmission lines is not expected to result in additional impact to prime farmland beyond those already occurring related to operation of the existing transmission lines, or where there are no existing lines, impacts are anticipated to be small. Routine maintenance activity may result in some soil disturbance, but the area will remain as irrigated farmlands preserving the prime farmland classification for the area.

4.9 Threatened, Endangered, and Sensitive Plants

4.9.1 No Action

No ground disturbing activities would occur under the No Action alternative and no impacts to soils or vegetation communities within the proposed transmission line corridors would occur. Therefore, there would be no impact to spreading gilia, the only sensitive plant which has been identified as potentially occurring within the project area.

4.9.2 Proposed Action

Construction Impacts

Due to the lack of suitable habitat in the project area, Ute ladies'-tresses is not anticipated to occur within the transmission line corridors and the installation and operation of the line will have no effect on Ute ladies'-tresses.

Spreading gilia is the only State or federal plant species of concern suspected to occur within the transmission line corridors. The closest known populations of spreading gilia are over 32 km (20 mi) west/northwest of the proposed transmission line corridors. During the October and November 2009 field surveys, no habitat containing rocky slopes of volcanic or limestone origin, the known habitat for the spreading gilia, was observed within the transmission line corridors, and no individuals or remnants of individuals were observed. Therefore, installation of the proposed transmission lines will not impact spreading gilia individuals or populations and will not cause the species to trend toward the need for further protection. No further surveys for sensitive plants are anticipated to be necessary within the transmission line corridors prior to installation activities beginning.

Operation and Maintenance Impacts

The transmission line corridors do not contain suitable habitat for the Ute ladies'-tresses or spreading gilia, thus operation and maintenance of the transmission lines will have no impact on these or other sensitive species.

4.10 Threatened, Endangered, and Sensitive Animals

4.10.1 No Action

Under the No Action alternative, the proposed transmission lines and Twin Buttes Substation would not be installed. There would be no impacts to the sagebrush habitat found within the proposed transmission line corridors. Suitable habitat would continue to be available to the eight BLM and State-listed bird species and three mammals that have the potential to occur within the proposed area. The proposed transmission line corridors do not provide suitable habitat for any of the ESA-listed species identified as potentially occurring within Bonneville, Bingham, and Butte Counties.

4.10.2 Proposed Action

Construction Impacts

The installation of the proposed transmission lines and new substation will result in the disruption of small patches of vegetation associated with the placement of the power poles and other structures (see Section 2.4.1). Disturbance in these areas will generally be limited to trampling of vegetation by equipment and personnel, although in some areas vegetation removal may be required. The vegetation around each structure is anticipated to reestablish once construction activities are complete and reclamation has occurred (see Section 2.4.3 and Table H-3). The proposed transmission line corridors do not contain any suitable habitat for ESA-listed species. There have not been any documented sightings or record of ESA-listed species within 3.2 km (2 mi) of the proposed transmission line corridors. Therefore, the proposed installation of the transmission lines is anticipated to have no effect on Canada lynx, Utah valvata snail, and yellow-billed cuckoo.

Of the eight BLM and State-listed bird species suspected to occur within the transmission line corridors, the greater sage-grouse is most likely to be affected by installation activities. Structures such as powerlines and fences pose hazards to sage-grouse because they provide additional perch sites for raptors and because sage-grouse may be injured or killed when they fly into these structures (Connelly et al., 2000). RMP will include avian-safe construction standards and follow bird management guidelines to decrease potential impacts to avian species (PacifiCorp, 2006). Increased human activity associated with construction activities and routine maintenance also can disrupt individuals during mating, nesting, and brood rearing seasons. To mitigate these impacts, installation activities will be scheduled to occur outside of seasonal lekking periods in areas known to contain active lekking sites. The breeding and nesting season for sage grouse in Idaho extends from March 1 to July 15 (Connelly et al., 2004). Prior to the initiation of work during this time period, known lekking grounds within 1.6 km (1 mi) of the project will be surveyed to identify activity or presence of individuals. If no individuals are present and the lekking area is not active, construction activity in the area will not impact individuals. There is one lekking ground identified by the IDFG CDC within 1.6 km (1 mi) of the proposed transmission line corridors. This lek is located on the south side of U.S. Highway 20 just within the INL boundaries.

The presence of new transmission lines in the area poses a risk to raptor species such as prairie falcon, northern goshawk, and ferruginous hawk. These species tend to roost and perch on power poles increasing the risk of electrocution. RMP utilizes a variety of mitigation methods and practices, such as industry guidelines included in *Suggested Practices for Raptor Protection on Power Lines* (APLIC, 2006), to ensure that design of new and existing transmission lines prevents significant hazards to large perching birds. Avian-safe construction standards will be followed. The objectives of avian-safe construction standards are to:

- Provide separation between energized conductors and/or energized conductors and grounded hardware; and

- Cover hardware or conductors if adequate separation is not possible; (PacifiCorp, 2006).

Smaller bird species such as Brewer's sparrow, sage sparrow, loggerhead shrike, and Lewis' woodpecker will experience minimal disturbance associated with the installation of the transmission lines. These species are seasonal migrants who typically use sagebrush habitat for nesting during June and July. To lessen the impacts to these species, surveys will be performed prior to construction during the nesting season to determine the presence of nests in sagebrush that may be disturbed. These surveys will occur in areas that are used as access routes, pole placements, and any other area where disturbance may occur. Due to the mobile nature of these species, adults and fledged young could avoid equipment and avoid construction areas while construction activities area taking place. The amount of sagebrush habitat that will be impacted will be limited to the location of pole placement and access routes, limiting overall impacts to habitat for these species.

The installation of the transmission lines will have little to no impact on the Townsend's big-eared bat. The Townsend's big-eared bat, along with other bat and myotis species, is primarily a nocturnal animal using dusk to dawn hours to hunt prey and forage. There will not be any construction activities occurring during these hours, lessening the potential for human interaction. There are no caves or other areas which would likely be used as roost sites during daylight hours which will be disturbed by the construction activities.

The transmission line corridors contain small patches of suitable habitat for the pygmy rabbit; however, there have been no documented occurrences of pygmy rabbits within the study corridors. During the field surveys in October and November 2009, no individuals or signs of recent use (i.e., pellet pads and active burrows) were observed within the study corridors. Similarly, studies conducted in 2008 for the EREF ER documented small patches of sagebrush habitat on the western portions of the site, but did not document sign or sightings of pygmy rabbits (see EREF ER Section 3.5 for additional information). U.S. Highway 20 has fragmented habitat along the study corridors and hinders dispersion. The installation of access routes and segments of two-track that will parallel the transmission lines for use during routine maintenance will create further habitat fragmentation in areas which contain suitable habitat for the pygmy rabbit.

There are two documented sightings of Piute ground squirrel within the 1.6 km (1 mi) buffer of the transmission lines. The transmission line locations will avoid impacts to these populations. Signs of many burrowing rodents were observed along the transmission line corridors during the 2009 field surveys. Care will be taken during construction and maintenance activities to avoid areas with extensive burrow systems to lessen impacts to populations of the Piute ground squirrel.

Operation and Maintenance Impacts

The operation and maintenance of the transmission lines would have no direct impact on threatened, endangered, or sensitive animals. Bird collisions with lines would be minimized during operation of the lines by incorporating the following avian-safe operation objectives as determined necessary through the PacifiCorp Bird Management Program (PacifiCorp, 2006):

- Discourage birds from nesting in unsafe locations;
- Provide safe alternative locations for perching or nesting; and
- Increase the visibility of conductors or static wires to prevent avian collisions (PacifiCorp, 2006).

Small mammals and rodents may be preyed upon more heavily by raptors as increased perch sites become available. There would be no difference in effects between the two proposed route options.

4.11 Tribal Treaty Rights

4.11.1 No Action

Under the No Action alternative, RMP would not build the proposed transmission line and the associated facilities. Therefore, there would be no potential impact to tribal treaty rights.

4.11.2 Proposed Action

Construction Impacts

There will be no changes in land status or access associated with the Proposed Action and the project area will retain its unoccupied federal land status. Therefore, the Shoshone-Bannock Tribes' right to access the lands to exercise treaty rights and traditional uses will be unaffected. There will be no difference in effects between the two proposed routes.

Operation and Maintenance Impacts

Tribal treaty rights will not be affected by operation and/or maintenance of the proposed transmission lines along either of the proposed routes. Short term disturbance of natural resources that may be used for traditional purposes could occur but no long term effects would result.

4.12 General Vegetation

4.12.1 No Action

Under the No Action alternative, the transmission lines and Twin Buttes Substation would not be constructed and there would be no impacts to vegetation within the project area.

4.12.2 Proposed Action

Construction Impacts

Vegetation will be impacted during the construction and installation of the proposed transmission lines and substation. The impacts to vegetation will occur at pole locations as well as along the access routes and substation location. Within sagebrush steppe communities, tall vegetation will be cut back or in some cases cleared to allow unimpeded access to work areas. The vegetation in the post-fire seeding areas and agricultural croplands are low enough to allow trucks and other equipment used during the installation process to drive over without causing damage to the vehicles or obstructing access. Construction within the sagebrush steppe habitat communities will result in the removal of approximately 16.6 ha (41 ac) of sagebrush habitat along Transmission Route Option 1 and 22.3 ha (55 ac) of sagebrush habitat along Transmission Route Option 2. This was calculated by assuming that a 6.1 m (20 ft) wide swath of vegetation associated with the sagebrush communities in all areas where they are present, exist along the proposed transmission line routes.

Dependent upon the time of year that the transmission lines are installed, damage to agricultural crops could occur within the pole installation areas in farmlands. The impacts to agricultural crop lands are anticipated to be small due to the close proximity of access points to the road and the centerline, limiting the need to drive vehicles into the fields.

To mitigate vegetation impacts, cleared or disturbed areas will be reseeded using a native seed mix and access routes will be limited to the extent possible using existing roads and trails (see Section 2.4.1).

Operation and Maintenance Impacts

Once construction is complete and access routes are established, only minimal sporadic impact to vegetation is expected from inspection and maintenance activities. These activities will result in potential vegetation damage or removal and soil compaction in the right-of-way locations. The disturbed areas are at risk of infestation by invasive or non-native vegetation species such as cheatgrass which often out-compete native grasses and shrub species. Therefore, disturbed areas will be reseeded using a native seed mix, as described in Section 2.4.3 and Table H-3.

4.13 Visual Resources

4.13.1 No Action

Under the No Action alternative, RMP would not build the proposed transmission lines or associated facilities. No construction activities would occur and no permanent structures would be built that would alter the existing visual conditions. Implementation of the No Action alternative would be in compliance with the VRM Class III rating of the project area.

4.13.2 Proposed Action

Construction Impacts

During construction, short-term visual impacts will result from the presence of equipment, materials, and work crews. Construction equipment will be out of character with the current uses and features of the area and surrounding properties. Construction of the access roads will be most visible to the public, including traffic along U.S. Highway 20 and visitors to the Hell's Half Acre trailhead. Although these impacts are short term, they will be noticeable to passing motorists traveling along U.S. Highway 20 and from people accessing or visiting the Hell's Half Acre. The impact to views from these view points will be small due to the size of the proposed transmission lines in comparison to the entire viewshed, and particularly with the distance from the trailhead. BMPs will be used to minimize dust generated during construction and disturbed areas will be stabilized as soon as practicable after construction. Therefore, the visual impacts due to the construction of the transmission lines will be small.

Operation and Maintenance Impacts

VRM Class III parcels have the objective to retain the existing character of the landscape. The level of change to the characteristic landscape should be low. Management activities may be seen, but should not attract the attention of the casual observer. Impact levels were classified as high, moderate, or low based on the degree of contrast of the project compared to the acceptable level of contrast for that VRM Class.

- High: Contrast from the project is substantially greater than acceptable.
- Medium: Contrast is somewhat greater than acceptable for the VRM Class.
- Low: Contrast is acceptable for the VRM Class.
- No Impact: Visual contrast is not perceptible.

The installation and operation of the transmission lines will slightly alter the existing landscape. The alteration is limited to the north side of U.S. Highway 20. This alteration, however, is not an introduced form or line not already present throughout much of the proposed transmission line corridor. Currently there is an existing transmission line which parallels West 65 North Street along the eastern route of Transmission Route Option 1 (Figure H-5a) between the Bonneville Substation (Figure H-5b) and the Kettle Substation (Figure H-5c). A smaller utility line is also present which parallels U.S. Highway 20 from the eastern end of the project area to the radio tower approximately 28 km (17.4 mi) from the western

edge of the project (Figure H-5d). Utility lines which occurred along this segment of the project area were consumed by fire over the last 10 years and were not replaced. There are also large transmission lines visible south of U.S. Highway 20 which parallel the highway crossing at the point where the proposed west transmission line turns north toward Antelope Substation (Figure H-5e). There are two larger transmission lines which parallel both the eastern and western ends of the project area, leading to the Antelope and Bonneville Substations (Figure H-5f). Therefore, the presence of the proposed transmission lines is not anticipated to attract the attention of the casual observer following installation and the level of contrast would be low. The casual observer's attention may be drawn to the transmission lines during periods of routine maintenances due to the increased human activity in the area, but these effects will be temporary lasting only for the duration of the activity.

Contrast ratings were assigned to each view point based on the following definitions:

- Strong: The contrast demands attention, would not be overlooked by the average observer, and is dominant in the landscape.
- Moderate: The contrast begins to attract attention and begins to dominate the characteristic landscape.
- Weak: The contrast can be seen but does not attract attention.
- None: The contrast is not visible or not perceived.

The degree of contrast was rated as weak from each of the key observation points analyzed. The degree of contrast was compared to the acceptable level of contrast for the VRM Class of the project area (the four levels of contrast roughly corresponding to the VRM Classes). The weak contrast rating given to the view points in the project area would be acceptable in VRM Class III and may be acceptable in Class II. The proposed transmission lines will not dominate the landscape and will meet the VRM objectives.

Visual impacts to archaeological sites eligible for the NRHP have also been considered. These include the Wasden Cave Complex, a proposed National Historic Landmark, located approximately 1.0 km (0.6 mi) from the northeast boundary of the EREF site. Visual impacts analyses were performed for the EREF and concluded that the tops of parts of the EREF buildings will be visible from the Wasden Cave Complex. Because the transmission structures are as high as the EREF buildings, and as close to the Wasden Cave Complex as the EREF, the tops of the transmission line structures on the east side of the EREF will be visible from the Wasden Cave Complex once they are constructed and in operation. However, these impacts will be small and unobtrusive given their distance from the site, and considering that there are existing transmission lines currently visible from the Wasden Cave Complex.

4.14 Wastes, Hazardous and Solid

4.14.1 No Action

Under the No Action alternative, RMP would not build the proposed transmission line and the associated facilities. Therefore, there would be no potential impact to hazardous or solid wastes.

4.14.2 Proposed Action

Construction Impacts

The presence of hazardous materials or hazardous wastes will become an issue within the proposed transmission line corridors if these substances are stored or handled improperly, or if they are encountered during construction, resulting in inadvertent releases to the environment. Aside from petroleum products used in the construction vehicles, the only hazardous materials that will be present

are those typical of high voltage substations: used in the voltage transformers, batteries, fuel for diesel generators, and sulfur hexafluoride (SF_6) circuit breakers.

All construction, operation and maintenance activities will comply with all applicable federal, state and local laws and regulations regarding the use of hazardous substances. Construction sites, material storage yards, and access roads will be kept in an orderly condition throughout the construction period. Materials that can be reused (e.g., wood poles) will be transported back to a local RMP store room. Wood poles and products that cannot be reused may be given to land owners along the transmission line routes and/or removed from the sites, along with other refuse and trash, and disposed of in an approved manner. Non re-usable metals (e.g., wire, hardware) will be transported to a salvage yard for scrap metal. Oils and fuels will not be dumped along the line and oils and chemicals for disposal will be hauled to an approved site. All materials will be transported in compliance with applicable state and federal regulations. Operators will have on site, and will implement the procedures contained in, an Emergency Response Plan, a Field Safety Plan, and a SPCC Plan, and will follow other BMPs for the control of waste, and will otherwise provide for the safety of workers and the public.

BMPs will be implemented to prevent pollution of surface and ground water, soil, and the atmosphere with any contaminant including hazardous or toxic materials. Any release of hazardous or toxic materials into the environment during construction will require immediate corrective action by the RMP contractor in accordance with applicable state and federal regulations.

Containment dikes will be used for all fueling tanks and for any other hazardous materials that are required for construction. Leak and spill containment will follow both the OSHA regulations and local safety codes and standards. The RMP contractor will be required to comply with all federal, state, and local laws and regulation controlling pollution and contamination of the environment. There will be no difference in potential effects between the two routes analyzed.

Operation and Maintenance Impacts

No hazardous or solid waste impacts are anticipated from operation and/or maintenance of the proposed transmission lines. The same practices described for construction activities will apply during maintenance activities. There will be no difference in potential effects from operation and/or maintenance along the two route options analyzed.

4.15 Water Quality, Surface and Ground

4.15.1 No Action

Under the No Action alternative, RMP would not build the proposed transmission line and the associated facilities. Therefore, there would be no potential impact to surface or ground water quality.

4.15.2 Proposed Action

Construction Impacts

Temporary impacts to ephemeral drainages will occur during site access. Drainages with steep banks will require the removal of material from the top of the bank to provide a gradual slope that will allow access by large equipment and trucks utilized in the construction process. The material removed from the banks of each of the drainages will be side-cast outside the channel and stockpiled in these locations until completion of the project. The top 15 cm (6 in) of material will be stockpiled separately from other material. Upon completion of the project, the material will be replaced, the banks will be graded as close to preconstruction contours as possible, the top 15 cm (6 in) of soil will be replaced, and the disturbed areas will be seeded where necessary.

There will be no impacts to ground water during construction. The installation of the poles for the transmission lines will not create a conduit into the aquifer.

BMPs will be designed to prohibit any discharges from the project site on to adjacent property and will be used to prevent pollution of surface and groundwater with any contaminate including hazardous or toxic materials. Any release of hazardous or toxic materials into the environment will require immediate corrective action by the RMP contractor in accordance with applicable state and federal regulations. Containment dikes will be used for all fueling tanks and for any other hazardous materials that are required for construction. Leak and spill containment will follow both the OSHA regulations and local safety codes and standards. The RMP contractor will be required to comply with all federal, state, and local laws and regulations controlling pollution and contamination of the environment.

Operation and Maintenance Impacts

Any impacts that may affect water quality during operation and maintenance of the transmission lines will be small. Access roads will have been constructed and stabilized during the construction phase of the project, so no impacts during inspection or maintenance activities are anticipated.

4.16 General Wildlife

4.16.1 No Action

Under the No Action alternative, the transmission lines and associated facilities would not be constructed and there would be no disturbance or alteration of the three habitat types (sagebrush, post-fire seedings, and agricultural croplands) that are present within the proposed transmission line corridors. Thus habitat for wildlife would be maintained and there would be no additional habitat fragmentation associated with this alternative.

4.16.2 Proposed Action

Construction Impacts

Many general wildlife species are known or suspected to occur within the habitats associated with the proposed transmission line corridor. Due to the close proximity to the heavily traveled U.S. Highway 20 and to agricultural croplands, these species are routinely disturbed by human activities. The installation of the transmission lines will result in a short-term increase in human presence during the construction phase of the project and the activity will be spread out over the length of the proposed corridor. It is anticipated that individual animals will avoid areas where work is occurring. The development of additional access corridors used for installation and routine inspection and maintenance of the transmission lines will result in the permanent alteration of vegetation communities in areas where the access routes are installed. The clearing or alteration of vegetation will further result in habitat fragmentation in the general area. Currently, much of this habitat is in a degraded state due to the fragmentation caused by its proximity of U.S. Highway 20 and other county and private roadways. The construction of the transmission lines is not anticipated to result in the alteration of big game migratory routes or use of these lands.

Operation and Maintenance Impacts

The presence of the transmission lines will not impact wildlife which occur within the project area. Accessing the transmission line routes for routine or emergency maintenance may impact individuals. These impacts will include disruption of burrows and disturbance of vegetation used for cover or forage. These impacts are anticipated to be isolated to areas associated with maintenance activities (along the rights-of-way), which will limit impact to individuals and not have an impact on the overall population of

any species within the project area. Bird species will be able to avoid impacts by flying away from the project area during maintenance activities, returning after activities are complete. Installation of a two-track access road along the transmission lines, where one does not currently exist, will result in an increase of habitat fragmentation, although much of the proposed routes is already fragmented from conversion to agriculture or conversion from sagebrush to crested wheatgrass plantings related to post-fire rehabilitation activities.

5 Cumulative Impacts

Cumulative impacts result "from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time" (40 CFR 1508.7). The methodology used to analyze the potential cumulative impacts included identification of the affected environment and environmental consequences associated with the proposed transmission lines, Twin Buttes Substation, and associated structures (presented in Chapters 3 and 4 of this ER), and the cumulative effects associated with past, present and future conditions relevant to this project when considered collectively.

The past, present, and future actions in the project area are fairly limited since much of the proposed transmission line routes is composed of agricultural cropland and native rangelands and grasslands. Agricultural practices have occurred and will continue to be practiced on the east proposed routes. The proposed EREF facility will be built along the proposed route. The research and testing activities of the INL, which is adjacent to the west proposed route, will be on-going and varied according to its mission. U.S. Highway 20 is adjacent to the southern boundary of the project area and represents a major transportation corridor between Idaho Falls to the east and INL (and other destinations) to the west. A number of existing and planned high voltage transmission lines cross the region, including several across INL and others to the east and south of the project boundaries. Cumulative impacts will generally result where these past, present, and future activities overlap on the landscape. Cumulative impacts would generally be additive and would be proportional to the amount and duration of disturbance within the specific project areas.

Cumulative impacts to air quality associated with the construction, operation, and maintenance of the transmission lines, substation, and associated facilities are anticipated to be small as air-related impacts are primarily short-term in duration resulting from the construction of the proposed facilities and limited operation and maintenance activities. Cumulative impacts to air quality could occur if other projects were constructed at the same time as this project. However, at this time there are no other known projects other than the EREF construction project. If multiple projects were constructed during the same time period, adherence to air permit requirements, and mitigation measures including dust suppression as outlined in respective project plans would effectively reduce these cumulative effects (see also Section 2.4.3 of this ER). Exceedance of regulatory standards is not anticipated.

Projects and activities in the vicinity of the proposed transmission line corridors may contribute cumulatively to cultural resource impacts. Thirteen new sites were recorded in the transmission line corridors as a result of the inventories conducted for this project. Seven of those are eligible for inclusion on the NRHP. Because most of these resources can be avoided by construction activities, and since consultation with the Idaho SHPO would be required to develop mitigation actions to reduce or compensate for damages to unavoidable, NHRP eligible resources, cumulative impacts to cultural resources will be small.

Cumulative effects to biological resources are generally additive and would be proportional to the amount of ground disturbance and native vegetation removal within specific project areas. Increasing numbers of transmission lines, roads and development in areas of wildlife habitat are an important consideration. Such impacts can be minimized through the concentration of linear projects (transmission lines) into designated corridors with the goal of reducing habitat fragmentation. Of primary consideration for biological resources are actions that could reduce native sagebrush habitat and result in a concomitant decrease in habitat for sagebrush obligate wildlife species. Continued land use, primarily agriculture and grazing, will continue to have similar impacts on wildlife and habitat. Wildfire threats will remain which could reduce sagebrush habitat. In the larger region, reduction of sagebrush steppe habitat has occurred and will likely continue from conversion of sagebrush steppe for development. Construction and operation of the proposed transmission lines and associated facilities will contribute to the direct loss of up to 16.6 ha (41 ac) of sagebrush habitat in the region, if Transmission Route Option 1 is selected, and about 22.3 ha (55 ac) of sagebrush steppe in the region, if Transmission Route Option 2 is selected. This loss will be at the edge of contiguous habitat adjacent to U.S. Highway 20 and will represent less than 1% of the sagebrush steppe habitat within 8 km (5 mi) of the proposed corridor. Therefore, cumulative impacts will be small.

The cumulative impacts to soils of the proposed construction, operation, and maintenance of the transmission lines, substation, and associated facilities will be similar to the direct and indirect impacts of the project and those associated with the current land use. No federal, state, or private development plans are known within the proposed corridor other than the EREF. Current land use, primarily agriculture and grazing, will continue to have similar impacts on soils and habitat on surrounding properties. Construction of the proposed transmission lines will result in limited soil erosion, which will be minimized using BMPs. Therefore, cumulative impacts to soils will be small.

Increased visual modifications to the landscape would be expected due to the addition of transmission poles (resulting in more contrast of form, line color, and texture). Usually, the first transmission line or substation located within a corridor will cause the greatest incremental change, and then each additional line will add cumulatively, but often increasingly less, to the visual impact. A number of existing transmission lines and the resulting visual impacts are present within the region and in the immediate vicinity of the eastern and western extents of the proposed corridor and along the eastern portion of Transmission Route Option 1. In addition, there is an existing telephone line along the eastern portion of Transmission Route Option 2. The proposed transmission lines would not dominate the landscape and would meet the VRM objectives. Therefore, cumulative impacts to visual resources will be small.

6 Preparers

The organizations and individuals listed below are the principal contributors to the preparation of this Environmental Report (ER).

North Wind, Inc. (Consultant)
Jace Fahnestock, PhD
Tim Funderburg
Kelly Green
William Harding, RPA
Doug Larsen
Rusty Smith
Denise Stark
Scott Webster

Mike Whitson

Rocky Mountain Power, Inc. (PacifiCorp)
Brent Barker
Erik Brookhouse
Paige Gardiner
Randall Leonard
Rick Lungman
Isaac Oakeson

AREVA Enrichment Services, LLC
Philip Ballard
George Harper
Jim Kay
Bob Poyser
Stacy Thomson

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Table H-1. Anticipated transmission line construction equipment and personnel

Activity/Crew	People*	Type of Equipment	Quantity
Survey	3	Pickup truck	2
Transporting equipment to pole locations along the right-of-way and assembling hardware on poles	6	Tracked backhoe or blade	1
		Semi-truck with flatbed trailer	1
		Pickup truck	1
		Water truck (for dust control near highways)	1
		Crane	1
Setting poles	6	Pickup truck	2
		Crane	1
		Truck mounted auger	1
Installing conductors, pulling and tensioning	10	Wire reel trailer	2
		Diesel tractor	2
		Crane	1
		Pickup truck	2
		Drum puller	1
		Double-wheeled tensioner	1
		Carry all	1
		Static trailer	1
Sagging, clipping and dead-ending	6	High ranger	1
		Pickup truck	2
Reclamation	4	Landscaping tractor with harrower/drill seeder	1
		ATV with broadcast seeder	1
		Pickup truck	1
Total Personnel Required	**35**		

*Electrical contractor utilizes the same personnel for multiple activities, but personnel are counted separately for each task

Table H-2. Anticipated substation construction equipment and personnel

Activity/Crew	People*	Type of Equipment	Quantity
Survey	3	Pickup truck	1
Site preparation	4	Pickup truck	1
		Tracked backhoe	1
		Grader	1
		Water truck (for dust control)	1
Yard construction	7	Pickup truck	3
		Tracked backhoe	1
		Grader	1
		Dump truck	1
Equipment installation	10	Pickup truck	4
		Cement truck	1
		Crane	1
		Semi-truck with flatbed trailer	1
		Material truck	1
Tie-ins to overhead lines	4	Bucket truck	1
		Pickup truck	2
Energizing the equipment	4	Testing van and equipment	1
		Mineral oil trailer	1
		Pickup truck	1
Site Restoration	3	Landscaping tractor with harrower/drill seeder	1
		ATV with broadcast seeder	1
		Pickup truck	1
Total Personnel Required	**35**		

* Electrical contractor utilizes the same personnel for multiple activities, but personnel are counted separately for each task

Table H-3. Mitigation measures for resources along the transmission line corridors

Resource	Mitigation Measures
Access	Since access will not be affected during construction and/or during operations and maintenance of the transmission lines, no mitigation measures are anticipated.
Air Quality	• Construction BMPs will be applied to minimize fugitive dust. • Water and/or an environmentally safe chemical soil stabilizer or a chemical dust suppressant will be applied on unpaved access roads, as needed. • Reduced speed limits on unpaved, access roads will be imposed.
Cultural Resources	• Except for Site MW004 within the boundaries of the EREF, all cultural resource sites along the transmission line corridors will be avoided by selective pole placement and by limiting vehicular traffic and construction and maintenance activities to areas that have been surveyed for cultural resources. • AES will develop a treatment plan for Site MW004 in conjunction with the Idaho SHPO. The treatment of Site MW004 will occur prior to construction activities in that location, or Site MW004 will be marked along with a suitable buffer zone so that construction activities do not impact this site. • RMP will develop an Unanticipated Discoveries Plan to deal with unexpected discoveries of human remains or other items of archaeological significance encountered during construction activities. • If potential indirect visual impacts to NRHP-eligible sites cannot be avoided, mitigation measures will be developed in consultation with the Idaho SHPO.
Environmental Justice	Since no minority or low-income populations have been identified that will be disproportionately or adversely impacted by the proposed project, no environmental justice mitigation measures are anticipated.
Land Uses	• To the extent possible, steps will be implemented during the design phase of the project to minimize disturbance to croplands and impacts to existing irrigation systems. • As feasible, RMP will limit construction to periods when livestock are not present on the allotments or if livestock owners are agreeable, livestock may be moved to pastures not being affected by construction activities. • Water and/or an environmentally safe chemical soil stabilizer or a chemical dust suppressant will be applied on unpaved access roads, as needed to control fugitive dust emissions. • As needed, crushed stone will be placed on top of disturbed soil in areas of concentrated runoff to prevent disturbance to residences and agricultural fields. Straw bales and silt fencing will be used as appropriate. • Graded areas will be restored to original contours to the extent possible and reseeded with an appropriate seed mix. • RMP's construction contractor will restore disturbed lands (e.g., access roads, rights-of-way, tensioning and pulling sites, structure sites, and other construction sites or storage areas). If surface soil is removed during the clearing process, it will be stockpiled separately from other grading stockpiles and replaced upon completion of construction activities. • Eroded areas that may develop will be repaired and stabilized
Invasive, Non-invasive Species	• Vehicles will be cleaned prior to entering the project areas during construction and operations and maintenance. • Disturbed areas will be re-seeded with a native seed mix to reduce the risk of spread of invasive or noxious species • Construction equipment, materials and vehicles would be stored at the sites where construction would occur or at specified construction yards. All personal vehicles,

	sanitary facilities and staging areas would be confined to a limited number of specified locations to decrease chances of incidental disturbance and spread of weeds. • Fill, free of noxious weed seed, will be utilized. • No herbicides will be used during construction, but may be used during operations and maintenance in limited amounts. Herbicides would be used according to government regulations and manufacturer's instructions to control noxious vegetation.
Migratory Birds	• Clearing or removal of habitat (e.g., sagebrush), will be performed outside of the breeding and nesting season (March 1 to July 15) for migratory birds. • During construction, if a raptor nest for a designated BLM special status specie becomes documented within 1.6 km (1 mi) of the transmission line corridors, seasonal stipulations may be coordinated with the BLM. Activities in areas containing active nests will be avoided during the seasonal nesting period. • RMP will consult with the USFWS to determine appropriate actions for taking of migratory birds, if needed.
Soil Resources	• Standard construction BMPs, (e.g., minimizing construction footprints to the extent possible, limiting site slopes to a horizontal-vertical ratio of four to one or less, protecting undisturbed areas with silt fencing and straw bales as appropriate, and placing crushed stone on top of disturbed soil in areas of concentrated runoff) will be developed. If conditions beyond those normally experienced are anticipated, additional project specific BMPs may be identified in coordination with the BLM and other applicable agencies. • RMP will obtain a NPDES Construction General Permit and develop a SWPPP to prevent impacts to land during construction. • Vehicles will be inspected for cleanliness from dirt and other matter that could be released onto the highway, prior to entering U.S. Highway 20. • Vegetation removal will be limited to the extent possible. • Work areas will be re-seeded after work is completed. • Water and/or an environmentally safe chemical soil stabilizer or a chemical dust suppressant will be applied on unpaved access roads and for large ground disturbing activities, to control fugitive dust emissions, as needed. • To the extent possible, pole placements will be designed to span prime farmland and minimize impacts to existing irrigation systems. • A SPCC Plan will be implemented and will identify sources, locations and quantities of potential spills and response measures. The plan would also identify individuals and their responsibilities for implementation of the plan and provide for prompt notifications to State and local authorities, as required.
Threatened, Endangered and Sensitive Plants	Since the transmission line corridors do not contain suitable habitat for threatened, endangered and sensitive plants, no mitigation measures are anticipated.
Threatened, Endangered and Sensitive Animals	• Clearing or removal of habitat (e.g., sagebrush) will be performed outside of the seasonal sage-grouse lekking period (March 1 to July 15). Prior to the initiation of construction work during this time period, known lekking grounds within 1.6 km (1 mi) of the transmission line corridors will be surveyed. If a sage-grouse lek is found to be occupied, seasonal stipulations may be coordinated with the BLM. Surveys will also be performed to identify active sage grouse nests. If additional areas are to be disturbed or impacted that have not been cleared outside of the seasonal lekking period. Activities in areas containing active nests will be avoided during the seasonal lekking period. • During construction, if a raptor nest for a designated BLM special status specie

	becomes documented within 1.6 km (1 mi) of the transmission line corridors, seasonal stipulations may be coordinated with the BLM. Activities in areas containing active nests will be avoided during the seasonal nesting period. • To minimize impact to smaller bird species (i.e., Brewer's sparrow, sage sparrow, loggerhead shrike, and Lewis' woodpecker), surveys will be performed prior to construction during the nesting season (June to July) to determine the presence of nests in sagebrush. Sage brush removal will be limited to the location of pole placement, access routes and new substation location. • Industry guidelines for preventing injuries to large perching birds and avian-safe design, construction and operation standards will be followed. • Care will be taken during construction and maintenance activities to avoid areas with extensive burrow systems to lessen impacts to populations of the Piute ground squirrel. • Vehicle speeds along the transmission line corridors will be reduced. Since there is no suitable habitat for ESA-listed species, no occurrences of pygmy rabbits, and no caves or other areas used by the Townsend's big-eared bat, no mitigation measures for these animals are anticipated.
Tribal Treaty Rights	Since there will be no changes in land status or long term effects from disturbance to natural resources, no mitigation measures associated with tribal treaty rights to access federal land are anticipated.
General Vegetation	• Cleared or disturbed areas during construction and operations and maintenance will be reseeded using a native seed mix and access routes will be limited to the extent possible using existing roads and trails. • Sage brush removal will be limited to the location of pole placement, access routes and new substation location. • Since impacts to agricultural crop lands are anticipated to be small due to the close proximity of access points to the road and the centerline, limiting the need to drive vehicles into the field. Therefore, no mitigation measures for croplands are anticipated beyond designing pole placements to minimize disturbance to croplands, to the extent possible.
Visual Resources	• Construction BMPs will be applied to minimize fugitive dust. • Disturbed areas will be stabilized as soon as practicable after construction.
Wastes, Hazardous and Solid	• A SPCC Plan will be implemented and will identify sources, locations and quantities of potential spills and response measures. The plan will also identify individuals and their responsibilities for implementation of the plan and provide for prompt notifications to state and local authorities, as required. • Construction, and operation and maintenance activities will comply with all applicable federal, state and local regulations regarding the use of hazardous substances and disposal of hazardous wastes. No oils or fuels will be disposed/dumped along the transmission lines routes. An Emergency Response Plan and a Field Safety Plan will also be developed. Construction sites, material storage yards and access roads will be kept in an orderly condition. • Materials that can be reused (e.g., wood poles) will be transported back to a local RMP store room. Wood poles and products that cannot be reused may be given to land owners along the transmission line routes and/or disposed of at a nearby approved landfill or salvage yard. Non re-useable metals (e.g., wire, hardware) will be transported to a salvage yard for scrap metal. All materials will be transported in compliance with applicable regulations. • Adequately maintained sanitary facilities will be provided for construction crews. • Containment dikes will be used for fueling tanks and other hazardous materials

	required for construction. Leak and spill containment will follow applicable regulations.
Water Quality, Surface and Groundwater	• RMP will obtain a NPDES Construction General Permit and develop a SWPPP to prevent impacts to groundwater during construction. • Material removed from banks of drainages will be stockpiled separately from other material and replaced upon completion of construction activities. The banks will be graded as close to preconstruction contours as possible, and re-seeded as necessary. • Construction, and operation and maintenance vehicles will be in good repair without visible leaks of oil, greases, or hydraulic fluids. • As needed, crushed stone will be placed on top of disturbed soil in areas of concentrated runoff to prevent disturbance to residences and agricultural fields. Straw bales and silt fencing will be used as appropriate. • BMPs, including a SPCC Plan, will prohibit any discharges from the transmission line corridors on to adjacent property and will be used to prevent pollution of surface and groundwater. Any release of hazardous or toxic materials into the environment will require immediate corrective action in accordance with applicable state and federal regulations. • Containment dikes will be used for fueling tanks and other hazardous materials required for construction. Leak and spill containment will follow applicable regulations.
General Wildlife	• Sage brush removal will be limited to the location of pole placement, access routes and the new substation location. • Care will be taken during construction and maintenance activities to avoid areas with extensive burrow systems. • Native seed mix will be used to revegetate disturbed areas. • Vehicle speeds along the transmission line corridors will be reduced. • Precautions will be taken to protect birds during nesting season. • Recommendations of appropriate state and federal agencies, including the USFWS, will be considered.

Table H-4. Previous cultural studies within 1.6 km (1.0 mi) of the transmission line project area

Report Title	Author	Date
Missing	Unknown	?
INEL Army Reactors Experimental Area	Unknown	?
National Guard R&PP	Wright, S.	1979
Perimeter Boundary	Miller, S.	1984
East Butte Cinder Pit	Hill, D.	1985
CFA Perimeter	Ross, J.	1985
CFA Survey	Ross, J.	1985
Optic fiber line	Ross, J.	1985
Fiber Optic Line from ANL-W to Idaho Falls	Ross, J. and W. Reed	1986
CFA Substation	Ross, J.	1986
ANL-Hwy 20 Fiber Optic Line	Reed, W.R.	1987
Security Signing Project	Ross, J.	1987
Fence line and Demonstration Area	Ringe, B.L.	1989
Fast Attack Vehicle Range	Wright, S.	1989
Rockford GWEN Sites	Chance, D.	1990
NPR Sample Survey	Henrikson, N.	1990
1990 NPR Sample Survey Quad 723	Henrikson, N.	1990
INEL Sewer Upgrades	Marler, C.	1990
NPR Sample Survey Quad 691	Wright, S.	1990
Central Connector	Gilbert, H.	1992
INEL Central Connector	Gilbert. H.	1992
Missing	Miller, S.J.	1993
CFA Sewer Facility	Ringe, B.L.	1993
Ordnance Cleanup at ANL-W	Ringe, B.L.	1994
ANL-W Ordnance Remediation	Ringe, B.L.	1994
INEL Historic Building Inventory	Braun, J.	1995
Potato Cellars of Idaho	Scupholm, C.	1995
CEEA 96-7 Argonne Burn	Jenks, M.	1996
INEEL Historic Context	Arrowrock Group	1997
Site-wide Road Upgrades – E. Portland/US Highway 20/26 Interchange	Pace, B.R.	1997
LMITCO INEEL Road Upgrades, Taylor	Pace, B.R.	1997
HWY 20/26 Controlled Burn	Pace, B.R.	1998
Tom Cat Hill East	Sayer, C.	2001
Scott Fire	Pace, B.R.	2002
ISU Predictive Model	Holmer, R.N.	2003
MWHI-TK4, Eagle Rock Enrichment Facility and Amendment	Sigler, J.	2008
INL Wind Towers	Pace, B.R.	2009

Table H-5. Soil map units within the transmission line corridors

Map Unit: 17—Lava flows
Map Unit: 22—Pancheri silt loam, 0 to 2 percent slopes
Map Unit: 23—Pancheri silt loam, 2 to 4 percent slopes
Map Unit: 24—Pancheri silt loam, 4 to 8 percent slopes
Map Unit: 25—Pancheri silt loam, 8 to 15 percent slopes
Map Unit: 26—Pancheri-Rock outcrop complex, 2 to 25 percent slopes
Map Unit: 32—Pits
Map Unit: 33—Polatis-Rock outcrop complex, 2 to 25 percent slopes
Map Unit: 16—Coffee-Nargon-Atom complex, 2 to 12 percent slopes
Map Unit: 72—Menan silt loam, 0 to 2 percent slopes
Map Unit: 77—Nargon-Deuce-Lava flows complex, 0 to 20 percent slopes
Map Unit: 86—Pancheri silt loam, 2 to 8 percent slopes
Map Unit: 87—Pancheri-Polatis complex, 2 to 12 percent slopes

Table H-6. BLM and State-listed plant species within the three counties of the transmission line corridors

County	BLM Ranking[1]	State Ranking[2]	Habitat Requirements
Bonneville County			
Green Spleenwort *Asplenium trichomanes-ramosum*		S1	North-facing cliffs in moist montane environments
Payson's Milkvetch *Astragalus paysonii*		S3	Open places in the timber belt, burned-over forests, on decomposed granites, or other open disturbed mountainous sites on silty and ashy soils
Western Sedge *Carex occidentalis*	BLM Type 3		Dry, open, or lightly wooded slopes, less often in meadows, generally at middle, but extending upward to subalpine and alpine areas
Payson's Bladderpod *Lesquerella paysonii*		S2	Limestone and gypsum soils on rocky slopes near upper tree line in the Teton Mountain Range
Gray Willow *Salix glauca*		S2	Open, alpine and subalpine habitats that commonly have rocky, well-drained soils
Saint Anthony evening-primrose *Oenothera psammophila*	BLM Type 2	S3	Trailing margins of migrating sand dunes in inter-dunal areas having sand-filled cracks over basalt outcrops and developing primary plant communities
Alkali primrose *Primula alcalina*	BLM Type 2	S2	Alkali primrose occurs in wet, spring-fed, alkaline, intermontane valley meadow systems
Rolland's bulrush *Scirpus rollandii (Trichophorum pumilum)*		S1	Rich fens; wet calcareous soils
Ute ladies'-tresses *(Spiranthes diluvialis)*	BLM Type 1	S1	Subirrigated, alluvial soils along streams and rivers and their floodplains, including abandoned river channels, wet meadows, and open seepy areas
Bingham County			
Iodine Bush *Allenrolfea occidentalis*		S1	Alkaline soils, mostly on raised sandy hummocks in salt playas and mud flats
Meadow Milkvetch *Astragalus diversifolius*	BLM Type 3	S2	Moist soils in alkaline meadows with flat or hummocky topography supporting graminoid or medium height shrub vegetation
Red Glasswort *Salicornia rubra*		S2	Moist, saline or alkaline soil of flats, shores, seepage areas, and ditches
Butte County			
Lost River Milkvetch	BLM	S3	Ledges, crevices, and other outcrops on steep limestone cliffs, and talus

County	BLM Ranking[1]	State Ranking[2]	Habitat Requirements
Astragalus amnis-amissi	Type 3		along cliff bases; often in partial shade
Lemhi Milkvetch *Astragalus aquilonius*	BLM Type 2	S3	On dry, gentle to often steep and unstable slopes, talus, washes, alluvial debris, and flats
Meadow Milkvetch *Astragalus diversifolius*	BLM Type 3	S2	On dry, gentle to often steep and unstable slopes, talus, washes, alluvial debris, and flats
Winged-seed Evening Primrose *Camissonia pterosperma*	BLM Type 4	S2	Dry, open slopes, ridges, and washes in the sagebrush and juniper zones
Low Fleabane *Erigeron humilis*		S2	Montane granite and limestone cliff faces, talus slopes, alpine meadows and tundra. Often in mossy, moist microsites
Welsh's Buckwheat *Eriogonum capistratum var. welshii*	BLM Type 2	S2	Primarily dry, windswept, sparsely vegetated sites characterized by shallow, clay-rich soils. Endemic to valleys and foothills of upper Big Lost, Little Lost, and Pahsimeroi rivers, and immediate vicinity, in Custer and adjacent portions of Lemhi and Butte counties
Spreading Gilia *Gilia polycladon*	BLM Type 3		Dry, open areas in desert shrub communities of shadscale, horsebrush, and sagebrush on sandy to silty soils
Obscure Phacelia *Phacelia inconspicua*	BLM Type 2	S1	Fairly steep, north- to east-facing, lower- to mid-slopes lying below the rimrock of butte tops or foothill ridgetops. All populations are in western Butte and adjacent Blaine counties
Marsh's Bluegrass *Poa abbreviata ssp. marshii*		S1	Soil pockets in alpine scree and talus
Hoary Willow *Salix candida*	BLM Type 4	S2	Bogs, fens, marshes, pond edges, and seepage areas
Nodding Saxifrage *Saxifraga cernua*		S2	Occurs in seepage areas, moist crevices, and along streambanks
Scapose Silene *Silene scaposa var. lobata*		S3	Subalpine grassy, gravelly, or rocky slopes, ponderosa pine forests, juniper scrub, sagebrush

[1]BLM rankings are as follows:

- Type 1: Threatened, Endangered, Proposed, and Candidate: Species listed by the USFWS or National Marine Fisheries Service (NMFS) as threatened, endangered, proposed, or candidates for listing under the ESA of 1973.
- Type 2: Rangewide/Globally Imperiled: Species experiencing significant declines throughout their range, with a high likelihood of being listed (under the ESA) in the foreseeable future due to their rarity and/or significant endangerment factors.
- Type 3: Regional/ State Imperiled: Species experiencing significant declines in population or habitat and are in danger of regional or local extinctions (in Idaho) in the foreseeable future if factors contributing to their decline continues. This includes Idaho BLM-sensitive species that (a) are not in Type 2, (b) have an S1 or S2 state rank

(exception being a peripheral or disjunct species), (c) score high (18 or greater) using the Criteria for Evaluating Animals for Sensitive Species Status, or (d) indicate significant declines in other regional/national status evaluations (e.g., Partners in Flight scores).

- Type 4: Peripheral: Species generally rare in Idaho, with the majority of their breeding range largely outside the state. This includes sensitive species that have an S1 or S2 state ranking but are peripheral species to Idaho.
- Type 5: Watch List: These species are not considered BLM-sensitive species and associated sensitive species policy guidance does not apply. Watch list species include species that may be added to the sensitive species list depending on new information concerning threats, species' biology, or statewide trends. The Watch List includes species with insufficient data on population or habitat trends or threats that are poorly understood.

[2]State rankings are as follows:

- S1: Critically Imperiled: At high risk because of extreme rarity (often five or fewer occurrences), rapidly declining numbers, or other factors that make it particularly vulnerable to rangewide extinction or extirpation.
- S2: Imperiled: at risk because of restricted range, few populations (often 20 or fewer), rapidly declining numbers, or other factors that make it vulnerable to rangewide extinction or extirpation.
- S3: Vulnerable: At moderate risk because of restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors that make it vulnerable to rangewide extinction or extirpation.
- S4: Apparently Secure: Uncommon but not rare; some cause for long-term concern due to declines or other factors.

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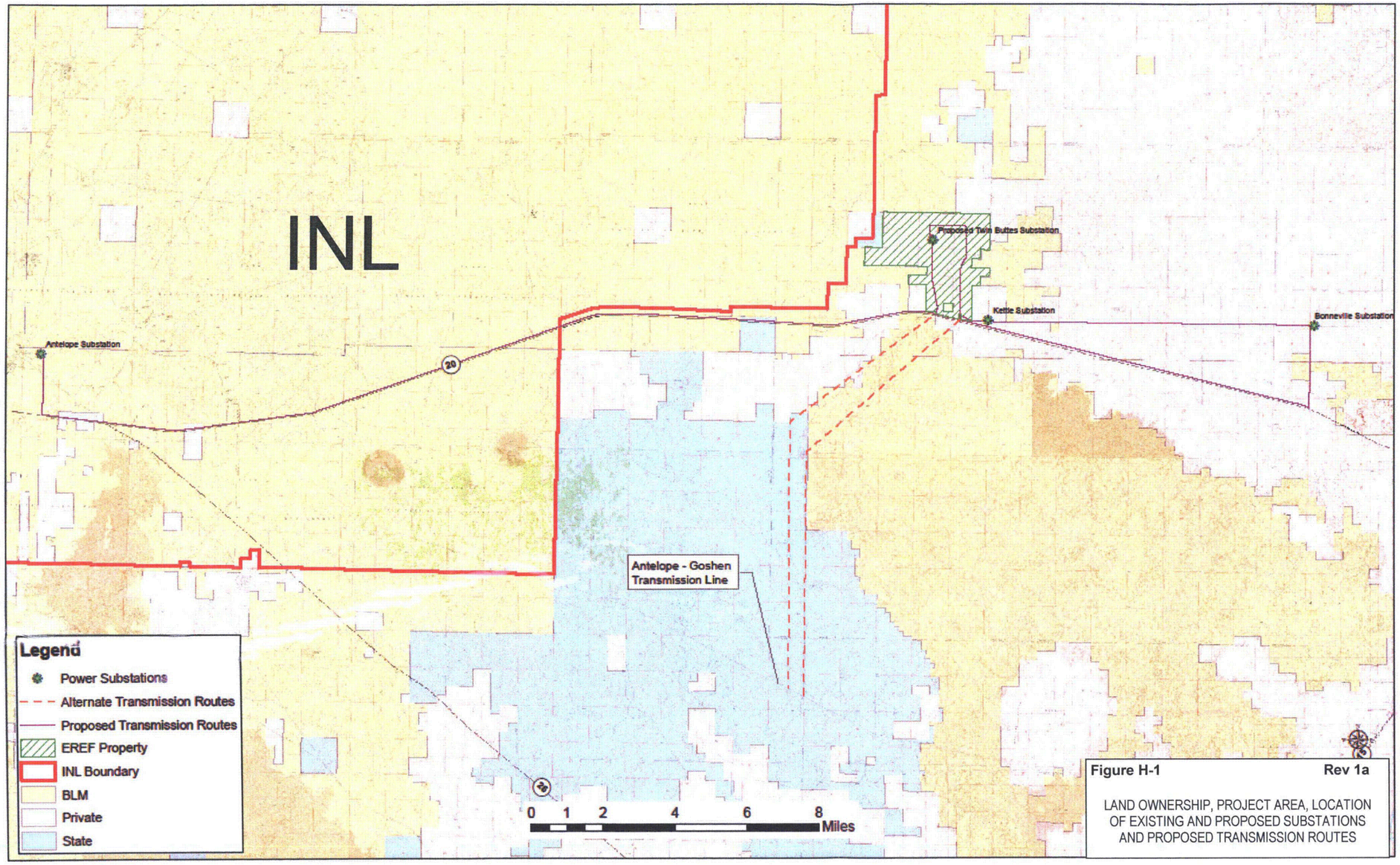

Figure H-1. Land ownership, project area, and location of existing and proposed substations and proposed Transmission Routes.

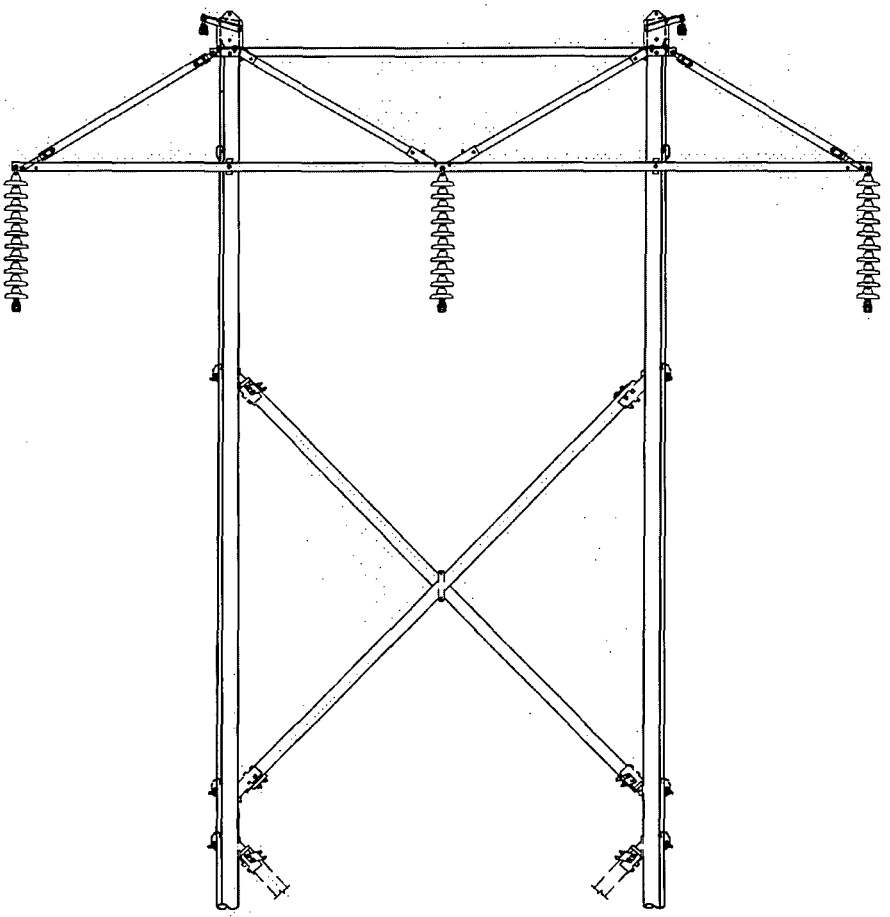

Figure H-2a. Typical design of a single-circuit double wood pole H-frame

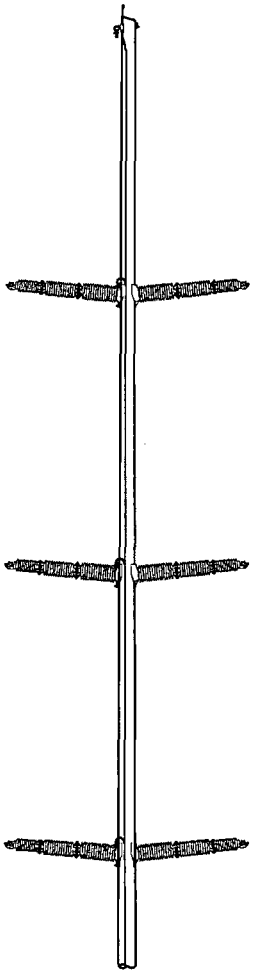

Figure H-2b. Typical design of a double-circuit single wood or steel pole

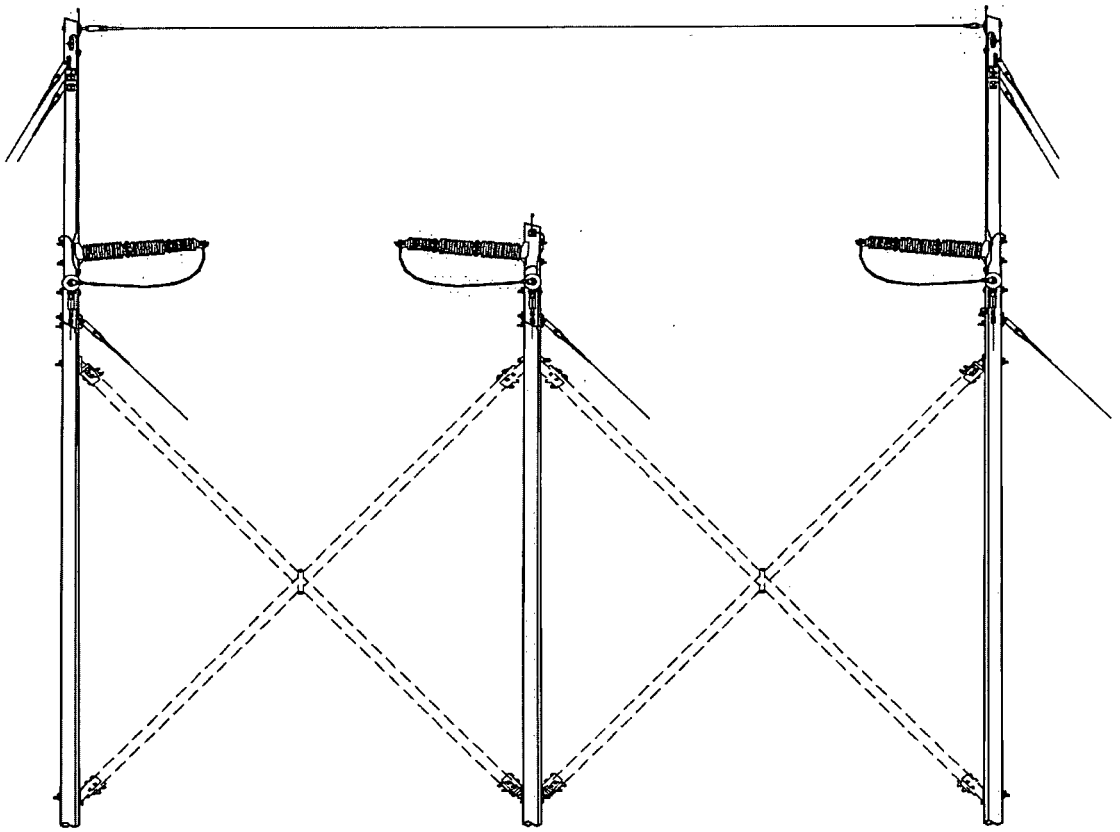

Figure H-2c. Typical design of a 3-pole dead-end structure (drawings not to scale)

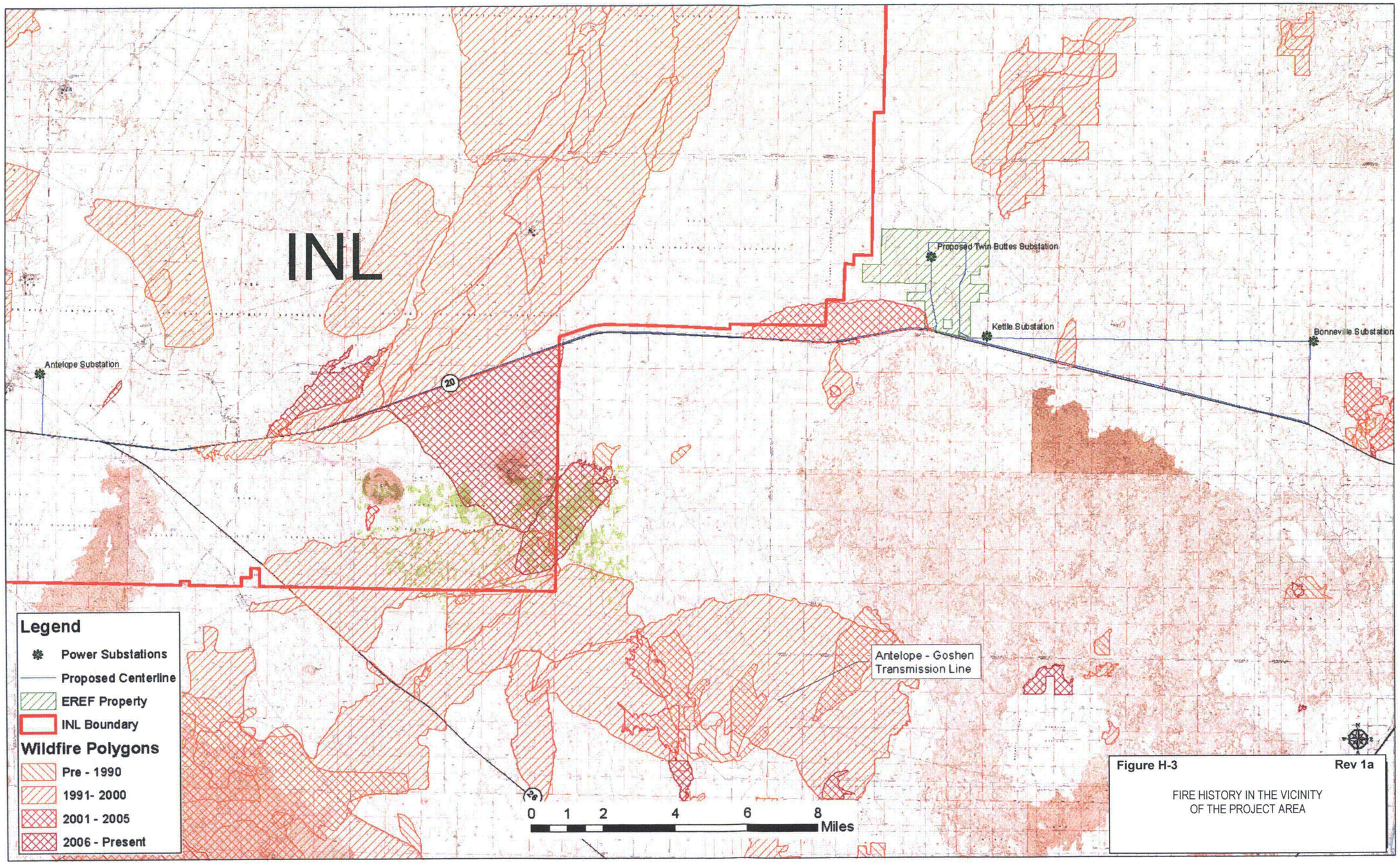

Figure H-3. Fire history in the vicinity of the project area

Figure H-4a. Key observation point at intersection of U.S. Highway 20 and U.S. Highway 26, facing east (left) and northwest (right)

Figure H-4b. Key observation point at U.S. Highway 20 near the radio communication tower on the eastern boundary of the INL, facing northwest (left) and west (right)

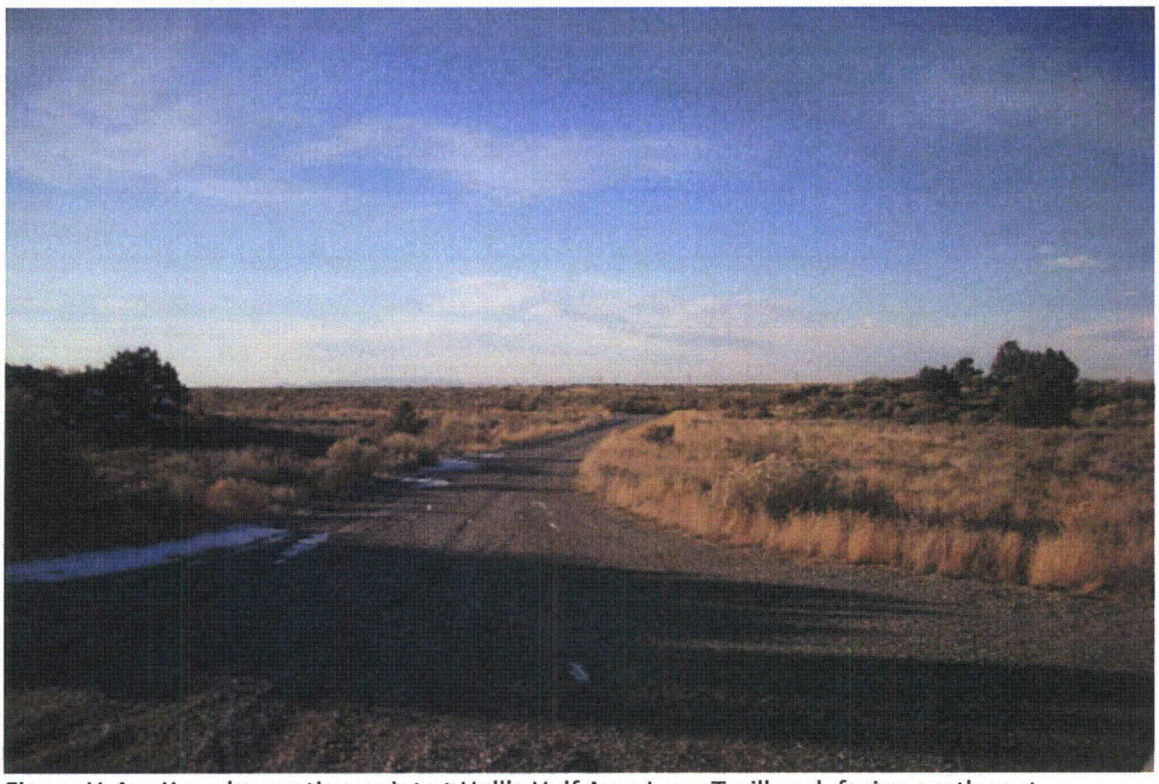

Figure H-4c. Key observation point at Hell's Half Acre Loop Trailhead, facing northwest.

Figure H-5a. Existing 69-kV transmission line along county road West 65 North Street, from Bonneville Substation to the Kettle Substation, facing west. Note agricultural fields that extend to the road edge.

Figure H-5b. Bonneville Substation, facing northeast.

Figure H-5c. Kettle Substation, facing west.

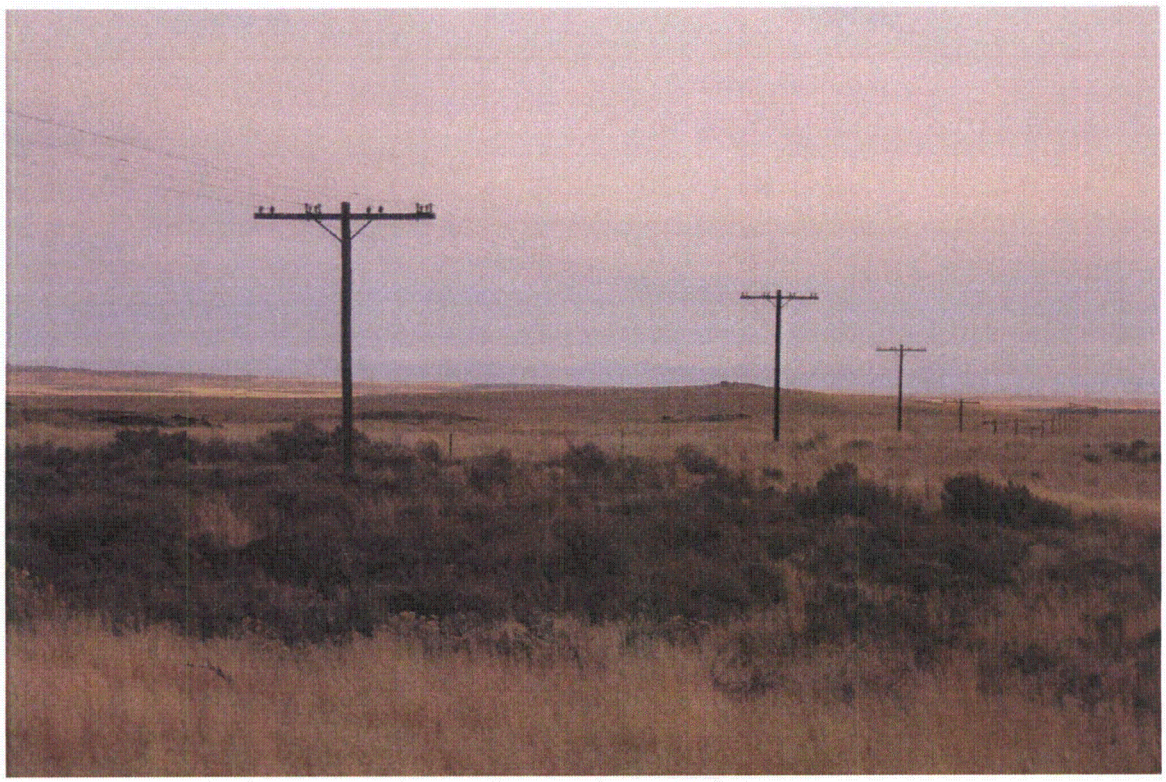

Figure H-5d. Utility lines on north side of U.S. Highway 20, facing east.

Figure H-5e. Transmission lines on the west end of the transmission corridor leading to the Antelope Substation, facing northwest.

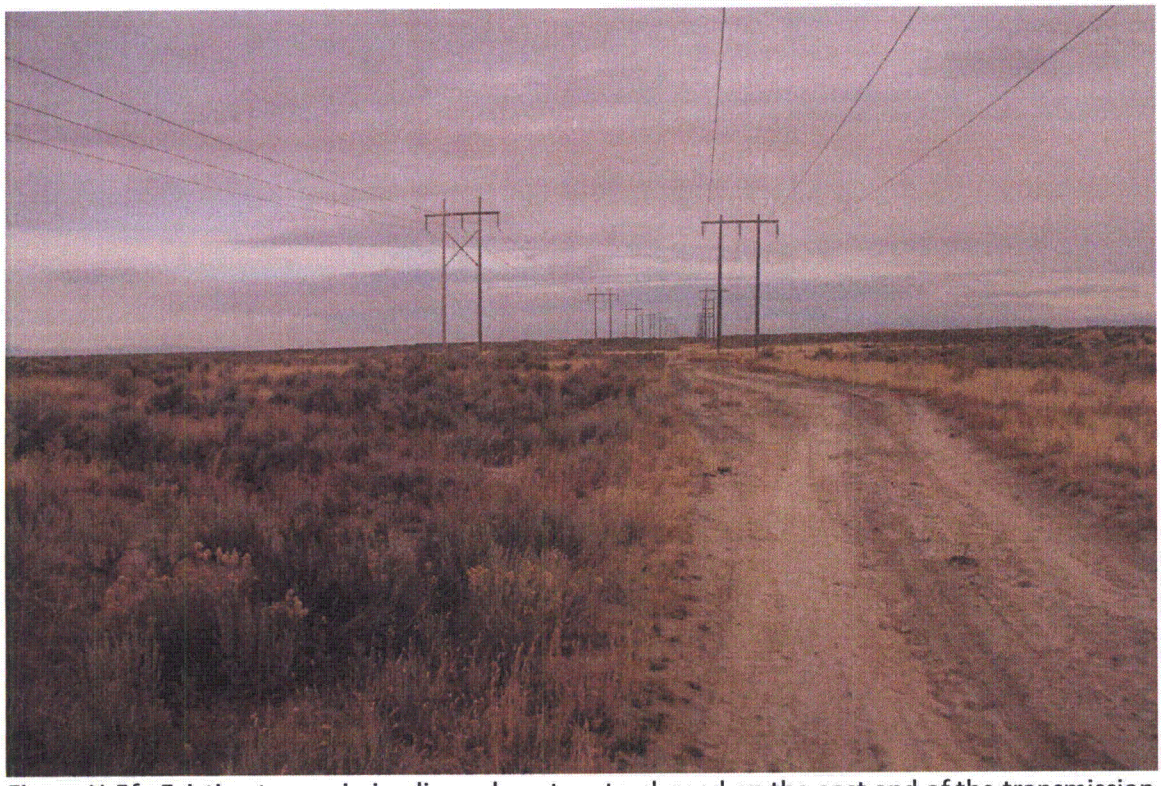

Figure H-5f. Existing transmission lines along two-track road on the east end of the transmission corridor between the Bonneville Substation and U.S. Highway 20, facing north.