B O N N E V I L L E   P O W E R   A D M I N I S T R A T I O N

Hooper Springs Transmission Project

Draft Environmental Impact Statement

March 2013

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DOE/EIS-0451

HOOPER SPRINGS TRANSMISSION PROJECT

Draft Environmental Impact Statement

DOE/EIS - 0451

Bonneville Power Administration

Cooperating Agencies

U.S. Department of Agriculture, Forest Service, Caribou-Targhee National Forest

U.S. Department of Interior, Bureau of Land Management

Idaho Office of Energy Resources

March 2013

Hooper Springs Transmission Project

Responsible Agency: U.S. Department of Energy (DOE), Bonneville Power Administration (BPA)

Cooperating Agencies: U.S. Department of Agriculture, Forest Service (USFS), Caribou-Targhee National Forest (C-TNF); U.S. Department of Interior, Bureau of Land Management (BLM); Idaho Office of Energy Resources

Title of Proposed Project: Hooper Springs Transmission Project, DOE/EIS - 0451

State Involved: Idaho

Abstract: BPA is proposing to build a new, 115-kilovolt (kV) transmission line in Caribou County, Idaho from a proposed new 138/115-kV BPA substation (Hooper Springs Substation), near the city of Soda Springs, Idaho, to a proposed BPA connection facility that would connect with Lower Valley Energy's (LVE) existing transmission system in northeastern Caribou County. BPA also would construct an approximately 0.5-mile-long, single-circuit 138-kV transmission line between the proposed Hooper Springs Substation and PacifiCorp's existing Threemile Knoll Substation to connect the new line to the regional transmission grid. BPA is considering a North Alternative, including two route options; a South Alternative, including four route options; and a No Action Alternative for the proposed transmission line.

The Project is needed to increase reliability to the southern portion of LVE's transmission system and to address ongoing electricity use (load) growth in southeast Idaho and the Jackson Hole valley area in northwestern Wyoming. BPA issued a Preliminary Environmental Assessment (EA) (DOE/EA-1567) for the Project in May 2009 (BPA 2009). Based on comments received on the 2009 Preliminary EA, BPA discovered that the Preliminary EA alternatives would all cross one or more areas that have selenium soil contamination from phosphate mining activities. As a result, BPA developed the North Alternative to avoid mining areas and is analyzing both the North Alternative and the South Alternative (the alternative considered in the Preliminary EA) in this Environmental Impact Statement (EIS).

The Project could create impacts on land use and recreation, visual resources, vegetation, geology and soils, water resources, wildlife, fish, cultural resources, social and economic resources, public health and safety, transportation, air quality, noise, and greenhouse gases. Chapter 3 of the EIS describes the affected environment and potential impacts in detail.

Public review and comment of this draft EIS will continue through April 22, 2013.

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For additional copies of this document, please call 1-800-622-4520 and ask for the document by name. The draft EIS is also on the Internet at: www.bpa.gov/go/HooperSprings. You may also request copies by writing to:

Bonneville Power Administration
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Portland, Oregon 97208
ATT: Public Information Center - CHDL-1

For additional information on DOE NEPA activities, please contact Carol M. Borgstrom, Director, Office of NEPA Policy and Compliance, GC-20, U.S. Department of Energy, 1000 Independence Avenue S.W., Washington D.C. 20585-0103, phone: 1-800-472-2756 or visit the DOE NEPA website at www.eh.doe.gov/nepa.

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Summary

This summary of the draft environmental impact statement (EIS) prepared for the Hooper Springs Transmission Project (Project) covers major topics discussed in the EIS, including:

- Purpose of and need for action
- Lead and cooperating agencies
- Public involvement
- Alternatives considered in detail
- Alternatives considered but eliminated from detailed study
- Affected environment
- Environmental impacts of the alternatives considered in detail
- Cumulative impacts

S.1 Purpose of and Need for Action

Bonneville Power Authority (BPA) is a federal agency within the U.S. Department of Energy (DOE) that owns and operates more than 15,000 circuit miles of high voltage transmission lines in the Pacific Northwest. BPA's electrical transmission system transmits most of the Pacific Northwest's power to serve customers in Idaho, Oregon, Washington, western Montana, and small parts of California, eastern Montana, Nevada, Utah, and Wyoming.

BPA has a statutory obligation to ensure it has sufficient capability to serve its customers through a safe and reliable transmission system. The Federal Columbia River Transmission Act directs BPA to construct improvements, additions, and replacements to its transmission system that the BPA Administrator determines are necessary to provide service to BPA's customers and maintain electrical stability and reliability (16 United States Code [U.S.C.] § 838b[b-d]). The proposed project is needed to improve the stability and reliability of the transmission system in southeastern Idaho.

Lower Valley Energy (LVE) and Fall River Electric Cooperative (FREC) are customers of BPA who purchase all, or almost all, of the electric power required to serve their electrical loads in eastern Idaho, northwestern Wyoming, and southwestern Montana from BPA. BPA has completed various upgrades and other improvements of existing BPA transmission lines that have increased the voltage stability and reliability of the FREC transmission system and the northern portion of LVE's transmission system. However, reliability and voltage stability of the southern portion of LVE's transmission system is a concern. LVE's system experiences extreme peaks in electrical load during winter, when temperatures can drop to -50 degrees Fahrenheit (°F) and electricity is needed for heat. If a transmission line serving the southern portion of LVE's system were to lose service due to weather or other events, voltage instability could occur and

LVE and FREC customers, including residential customers, could lose power and heat. Because such an outage would likely be associated with potentially life-threatening low temperatures, such an outage is a major concern.

In 2006, BPA developed a proposal to address the voltage stability and reliability concerns in the southern portion of LVE's transmission system and to meet projected load demands that involved construction, operation, and maintenance by BPA of the proposed Hooper Springs Substation, as well as partial funding by BPA of the construction, operation, and maintenance by LVE of a new 22-mile-long, double-circuit 115-kV transmission line in Caribou County, Idaho (the current South Alternative). BPA issued a Preliminary environmental assessment (EA) (DOE/EA-1567) for that proposed project in May 2009 (BPA 2009). Based on comments received on the 2009 Preliminary EA, BPA discovered that the South Alternative and its route options all crossed one or more areas that have selenium soil contamination from phosphate mining activities. Because of environmental and other concerns about these sites, BPA decided to develop the North Alternative for consideration and determined that preparation of an EIS for the Project was appropriate.

In meeting the need for action, BPA will attempt to achieve the following purposes:

- Maintain reliability of BPA's transmission system to BPA and industry standards.
- Meet BPA's contractual and statutory obligations.
- Minimize project costs.
- Minimize impacts to the natural environment.

S.2 Lead and Cooperating Agencies

BPA is the lead agency for the Hooper Springs Transmission Project EIS. The U.S. Forest Service (USFS), the U.S. Bureau of Land Management (BLM) and the Idaho Office of Energy Resources are participating in the preparation of this EIS as cooperating agencies under the National Environmental Policy Act (NEPA).

The USFS, through the Caribou-Targhee National Forest (C-TNF), will use the information contained in this EIS, its current Forest Plan, associated planning requirements, and comments from the public to decide whether to grant BPA a special use permit across forest lands to construct the transmission lines and associated access roads, and allow for maintenance of the transmission lines and roads, as necessary. If the C-TNF decides to grant BPA the special use permit, it must amend its current Forest Plan in order to adjust the management prescriptions associated with the lands crossed by the Project. The BLM also manages lands potentially crossed by the proposed transmission line regardless of route. Similar to the C-TNF, the BLM will decide whether to grant BPA a right-of-way (ROW) easement across BLM lands to construct the transmission lines and associated access roads, and allow for maintenance of the transmission lines and roads, as necessary.

S.3 Public Involvement

BPA initiated public involvement in May 2006, when it sent a letter concerning the Hooper Springs Transmission Project, as described in the 2009 Preliminary EA, to adjacent landowners; Tribes; federal, state, regional, and local agencies; interest groups; and others. BPA also held public scoping meetings for the EA in 2006 and 2007, and conducted other public outreach efforts during that time.

After BPA decided to prepare this EIS, BPA again solicited comments from the public to help determine what issues should be studied in the EIS. BPA requested comments through publishing a notice in the Federal Register; mailing letters to people who live along the proposed transmission line routes; federal, state, regional, and local agencies that may have expertise or require permits; Tribes with interest in the area; and other interest groups. BPA also issued a press release to local media, placed ads in local papers, held one public meeting, posted information on the project website, and met with Tribes, federal and state agencies and county staffs. Most scoping comments received by BPA focused on project need, proposed routes, disruption of future mining activities, crossing of lands undergoing investigation for selenium soil contamination and associated liability issues, mobilization and/or release of contaminants or toxic substances due to soil and sediment disturbance, and potential impacts on wildlife habitat, property values, visual quality, and water quality.

S.4 Alternatives Considered in Detail

BPA is considering two action alternatives, each with routing options, to meet the purpose and need: the North Alternative including two route options and the South Alternative including four route options. In addition, BPA is considering the No Action Alternative. Under the No Action Alternative, a new line would not be constructed.

S.4.1 North Alternative

The North Alternative would include a new, approximately 32-mile-long, single-circuit 115-kV transmission line in Caribou County north of Soda Springs, Idaho that would extend from the proposed BPA Hooper Springs Substation generally north and then east to the existing LVE Lanes Creek Substation (see Map S-1). This alternative also would include construction of the 138/115-kV BPA Hooper Springs Substation, which would be located about 3 miles directly north of the city of Soda Springs along Threemile Knoll Road. New 115-kV substation facilities within the boundaries of LVE's existing Lanes Creek Substation, which is located east of the unincorporated community of Wayan, Idaho, also would be constructed. A new 0.5-mile, single-circuit 138-kV transmission line that would extend from the proposed Hooper Springs Substation generally south to PacifiCorp's existing 345/138-kV Threemile Knoll Substation would be constructed to connect the new line to the regional transmission grid.

Easements and Land

The North Alternative would need a 100-foot-wide ROW for the new single-circuit 115-kV transmission line, a 150-foot-wide ROW for the new 138-kV line, and a 50-foot-wide easement for access roads. BPA would purchase easements on private or state lands or apply for special use permits or easements on federal lands. These easements or permits would provide BPA the rights to construct, operate, and maintain the lines in perpetuity. Construction of the Hooper Springs Substation would require the purchase of private land. At LVE's existing Lanes Creek Substation, BPA would obtain a special use permit from C-TNF and enter into a cooperating agreement with LVE for the use of a portion of its existing substation land.

Routing Options

Two, relatively short routing options have been identified as part of the North Alternative; the Long Valley Road Option and the North Highland Option. The Long Valley Road Option would move the North Alternative off state of Idaho lands and increase the length of the transmission line by approximately 0.6 mile. The North Highland Option is about 2.2 miles long and would move the North Alternative corridor on to primarily C-TNF lands. This option is the same length as the portion of line replaced along the North Alternative (also about 2.2 miles).

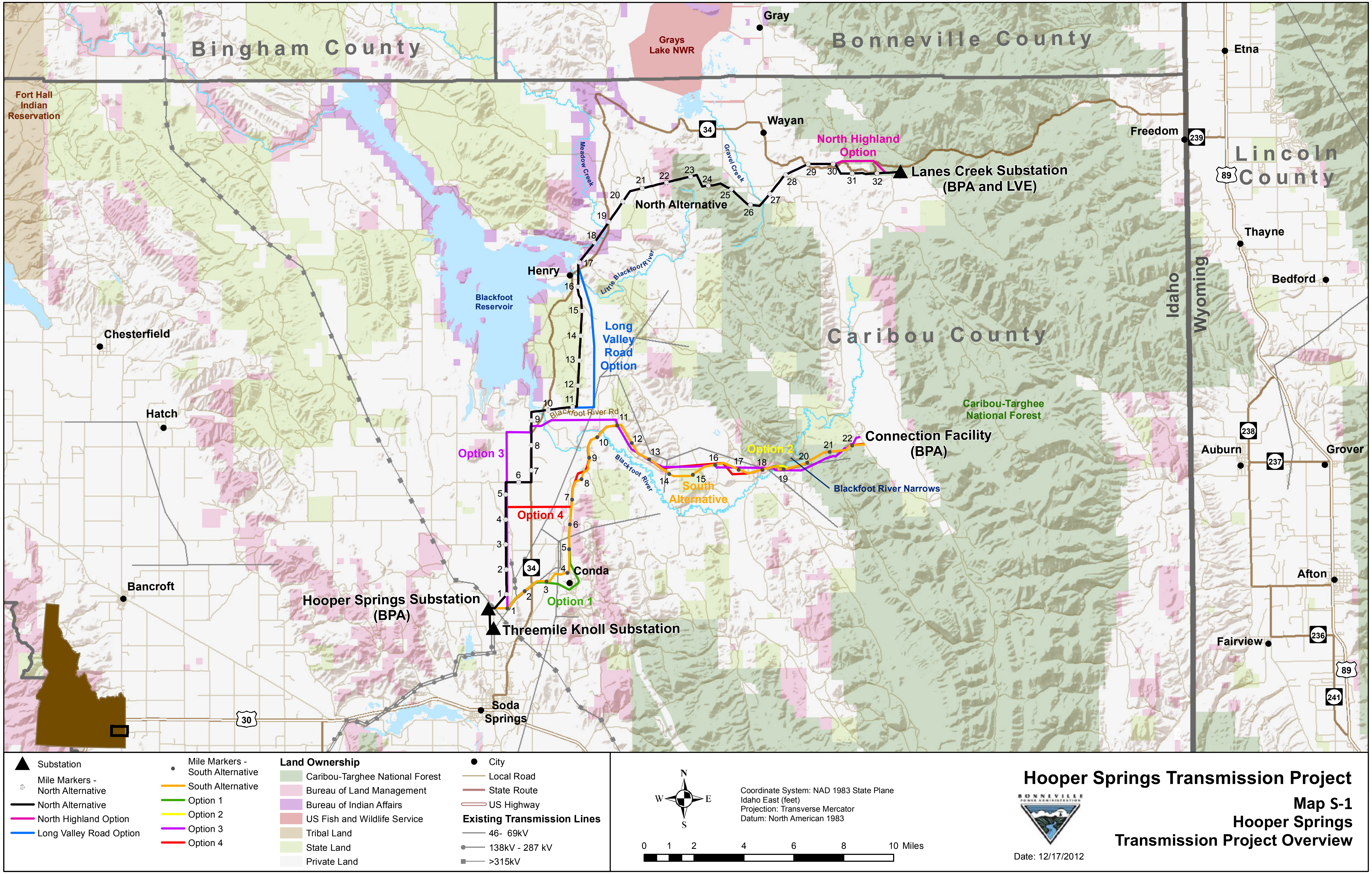
Transmission Structures and Footings

The North Alternative would require approximately 223 new structures over its 32-mile length. Approximately 10.8 miles would be constructed using about 73 steel single-pole structures between Hooper Springs Substation and transmission line mile (line mile) 11. These structures would be about 70 to 105 feet tall with spans of approximately 900 feet between structures. Guy wires would not be required on steel pole structures. Approximately 150 wood, H-frame structures would be installed over the remaining approximately 21.2 miles between line mile 11 and the Lanes Creek Substation. These structures would be about 55 to 105 feet tall with spans of approximately 800 feet between structures.

The proposed 138-kV transmission line would require 5 wood, H-frame structures over its approximately 0.5-mile length. The 138-kV wood structures would be 65 to 115 feet tall with spans of approximately 800 feet between structures.

The Long Valley Road Option would require the use of about 44 steel single-pole structures instead of 37 wooden H-frame structures. All of the North Highland Option would be composed of wood, H-frame structures and would require about the same number of wood-pole structures as the portion of line replaced along the North Alternative.

Temporary disturbance areas required to assemble and erect the suspension structures would be about 100 feet by 50 feet (0.1 acre) with about 100 feet by 100 feet (0.2 acre) needed for dead end and angle structures. All wood structures and most steel structures would be directly embedded into the ground. The average hole depth would be approximately 10 feet for wood pole structures and 15 feet for steel pole structures. Some steel structures, such as dead ends, would have a concrete pier for the footing and may be excavated to a depth greater than 15 feet.


Bingham County
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Tribal Land
State Land
Private Land
City
Local Road
State Route
US Highway
Existing Transmission Lines
46- 69kV
138kV - 287 kV
>315kV
N
W
E
S
Coordinate System: NAD 1983 State Plane Idaho East (feet)
Projection: Transverse Mercator
Datum: North American 1983
0 1 2 4 6 8 10 Miles
Hooper Springs Transmission Project
Map S-1
Hooper Springs Transmission Project Overview
Date: 12/17/2012

Conductors, Overhead Ground Wires, and Counterpoise

Conductors, wires that carry the electrical current on a transmission line, are suspended from towers with insulators. Insulators are made of non-conductive materials (porcelain or composite materials) that prevent electric current from passing through structure to the ground. The North Alternative would use non-reflective ceramic insulators. In addition, one or two small wires (0.5-inch diameter), called overhead ground wires, would be attached to the top of the transmission structures. Steel pole structures would have one overhead ground wire, while wood pole structures would have two. Overhead ground wires are used for lightning protection. In order to take the lightning charge from the overhead ground wire and dissipate it into the earth, a series of wires called counterpoise would be buried in the ground at each structure, depending on soil types present. Counterpoise would vary from one to six runs of wire that extend up to 100 feet from the structure, with two counterpoise running out from each side of the structure footings.

Staging Areas and Pulling and Tensioning Sites

Two temporary staging areas would be needed along or near the proposed transmission line for construction crews to store materials, equipment and vehicles. It is anticipated that approximately 10 acres of land would be required at each site for staging areas.

Pulling/tensioning sites are temporarily disturbed areas from which the conductors are pulled and tightened to the correct tension during construction. About 14 pulling/tensioning sites would be required along the North Alternative's approximately 32-mile length with about 2 pulling sites required for the 0.5 mile 138-kV line. An area about 100 feet wide by 300 feet long, or about 0.75 acre, would be disturbed at each pulling and tensioning site. Pulling and tensioning of the proposed line also would require "snubs," which are trenches approximately 8 feet deep by 4 feet wide by 12 feet long that are used to tie off the conductors after they are pulled through the towers and before they are strung under tension.

Substation Facilities

The proposed Hooper Springs Substation would be located at the southwestern end of the North Alternative corridor relatively close (about 0.5 mile) to the Threemile Knoll Substation and would occupy approximately 6.8 acres. Equipment installed would include a transformer, power circuit breakers, switches, bus tubing and pedestals, a control house and conduit, a stormwater retention system, and substation dead end structures.

The proposed substation facilities constructed at LVE's existing Lanes Creek Substation would be located at the northeastern end of the North Alternative. Additional equipment installed at Lanes Creek Substation include breaker, disconnect switches, dead end structures, and a control house. All additions would be located within the existing fenced boundary of the Lanes Creek Substation.

Access Roads

Access roads are the system of roads that BPA's construction and maintenance crews would use to get to the structures or structure sites along the transmission line and to the substation. New and existing access roads for the North Alternative would be graded and/or rocked to provide a 14- to 20-foot-wide travel surface with about a 20- to 30-foot-wide total disturbed area. The North Alternative would require about 23.7 miles of new, permanent access road and about 8.1 miles of existing access road would need to be improved and reconstructed. Temporary roads also would be constructed in some areas along the North Alternative. For permanent roads, BPA, in coordination with landowners, would install gates at the entrances to access roads to prevent motorized public access.

Vegetation Clearing

Vegetation would be maintained along the line for safe operation and to allow access to the line. Clearing at structure sites under the North Alternative may occur at the same time as corridor clearing. There are portions of the proposed transmission line ROW that would cross through forested areas that BPA would need to clear and maintain with compatible low-growing vegetation species. On either side of the new corridor, danger trees that pose a hazard to construction activities and reliable operation of the transmission line would be removed.

Construction Sequence, Schedule, and Work Crews

If BPA decides to proceed with the Project after completion of all necessary environmental review, construction of the proposed substation and transmission line could begin in spring 2014. BPA likely would construct the transmission line over two phases. The first phase would involve the clearing of the ROW, some access road construction, structure footing installation, and substation construction. The second phase would involve the construction of the remaining components of the transmission line and would occur in 2015. If this occurs, the new substation and transmission line may be energized as early as fall 2015. This expected schedule would result in a total construction period of about 16 months. However, weather or other factors could delay or prolong the construction schedule.

One or more construction crews would clear vegetation, improve/construct access roads, and construct the line. A typical crew can usually construct about 10 miles of transmission line in 2 to 3 months. Actual workforce numbers would vary over time. During peak construction, about 50 workers would be working on the transmission line at one time.

Maintenance

During the life of the transmission line, BPA would perform routine and periodic maintenance, and emergency repairs on the transmission line. Maintenance would typically involve replacing insulators or repairing guy wires, vegetation management, and soil stabilization. BPA typically conducts routine helicopter inspection patrols twice a year.

Estimated Cost

Construction cost of the Hooper Springs Substation, additions to Lanes Creek Substation, construction of the proposed 32-mile-long single-circuit115-kV and 0.5-mile-long 138-kV transmission lines is estimated to be about $51 million. Annual maintenance costs would be about $10,000 to $20,000.

S.4.2 South Alternative

The South Alternative and its routing options are the same as the action alternatives considered by BPA in the 2009 Preliminary EA for the Project. The South Alternative would include a new, approximately 22.5-mile-long, double-circuit 115-kV transmission line that would extend from BPA's proposed Hooper Springs Substation generally north to northeast for 6 to 8 miles before turning generally east to a proposed connection with LVE's existing transmission system in Caribou County, Idaho (see Map S-1). The new connection facility with LVE's existing transmission system would be located at a point about 2 miles southeast of the intersection of Blackfoot River Road and Diamond Creek Road. As with the North Alternative, the South Alternative would include construction of the 138/115-kV BPA Hooper Springs Substation and the 0.5-mile, single-circuit 138-kV transmission line to connect the line to PacifiCorp's existing 345/138-kV Threemile Knoll Substation.

Because the South Alternative and its options would cross one or more phosphate mining areas that may have heavy metal and selenium soil contamination, there likely are additional legal, financial, and operational liability risks to BPA associated with this alternative. BPA is continuing to evaluate this alternative to gain a better understanding of the associated risks and the potential ability to minimize these risks by avoiding historic and current mining activity and mitigating the potential impacts of future mining in the area.

Easements and Land

The South Alternative would need a 120-foot-wide ROW for the new double-circuit 115-kV transmission line, a 150-foot-wide ROW for the new 138-kV line, and a 50-foot-wide easement for access roads. Similar to the North Alternative, BPA would purchase easements on private or state lands or apply for special use permits or easements on federal lands for the South Alternative. These easements or permits would provide BPA the rights to construct, operate, and maintain the line in perpetuity. Construction of the Hooper Springs Substation would require the purchase of the same private land as the North Alternative. At the new connection facility with LVE's existing transmission system for the South Alternative, BPA would apply to secure the necessary special use permit from the C-TNF within LVE's existing transmission line ROW.

Routing Options

The four routing options that have been identified as part of the South Alternative all begin at the proposed Hooper Spring Substation and end at the proposed connection facility with LVE. Options 1 and 2 would follow the same general route as the South Alternative with one to two minor deviations near Conda and at the Blackfoot River Narrows. Option 1 would be about 23.1 miles long and Option 2 would be about 22.4 miles long. Option 3 would follow a route similar to the first part of the North Alternative west of Highway 34 before turning and rejoining the same general corridor as the South Alternative. Option 3 would be about 24 miles long. Option 4 would follow the same route as Option 3 for about 4.5 miles before turning east across Highway 34 to connect back with the South Alternative corridor. Option 4 would be about 23.2 miles long.

Transmission Structures and Footings

The South Alternative would require approximately 210 new 115-kV double-circuit steel structures over about 22.5 miles. The double-circuit steel poles for the South Alternative would be about 85 feet tall with spans of approximately 900 feet between structures. Route options would require about the same amount steel structures as the South Alternative. Like the North Alternative, the proposed 138-kV transmission line under the South Alternative would require five wood, H-frame structures over its approximately 0.5-mile length.

Temporary disturbance areas required to assemble and erect the suspension and dead end structures would be about 100 feet by 100 feet (0.2 acre). Some of dead-end or angle double-circuit steel structures may require guy wires. Like the North Alternative, all steel structures would be directly embedded into the ground using a drill rig to auger the holes with average hole depths of 15 to 30 feet. Dead end steel pole structures could also require a concrete footing.

Conductors, Overhead Ground Wires, and Counterpoise

The materials and installation methods used for conductors, overhead ground wires, and counterpoise under the South Alternative would be the same as under the North Alternative except there would be six conductors (for double circuit) instead of the three conductors (for single circuit). Also, the double-circuit steel structures for the South Alternative would require installation of one or two overhead ground wires on each structure.

Staging Areas and Pulling and Tensioning Sites

Two temporary staging areas about 2 to 5 acres each would be needed along or near the South Alternative for construction. Construction of about 12 pulling and tensioning sites with installation of snubs also would be required for the South Alternative plus about 2 pulling sites for the 0.5 mile 138-kV line.

Substation and Connection Facilities

The location, size, and components of the proposed Hooper Springs Substation under the South Alternative would be the same as under the North Alternative.

The new connection facility would be constructed within LVE's existing transmission line ROW along Diamond Creek Road, at a point about 2 miles southeast of the intersection of Blackfoot River Road and Diamond Creek Road.

Access Roads

Like the North Alternative, new and existing access roads for the South Alternative would be graded and/or rocked to provide a 14- to 20-foot-wide travel surface with about a 20- to 30-foot-wide total disturbed area. The South Alternative would require about 2 miles of new, permanent access road and approximately 22.8 miles of existing access road would need to be improved and reconstructed. Similar to the North Alternative, temporary roads also would be constructed in some areas along the South Alternative. For permanent roads, BPA, in coordination with land-owners, would install gates at the entrances to access roads to prevent motorized public access.

Vegetation Clearing

Vegetation clearing under the South Alternative would be the same as described for the North Alternative.

Construction Sequence, Schedule, and Work Crews

Construction of the South Alternative would follow the same sequence under the same schedule and with the same work crews as described for the North Alternative. However, the Lanes Creek Substation would not be constructed under the South Alternative, so would not be included in the construction process. Instead the LVE connection facility would be constructed.

Maintenance

Maintenance activities under the South Alternative would be the same as described for the North Alternative.

Estimated Cost

Construction cost of the Hooper Springs Substation and the proposed 22-mile-long double-circuit 115-kV and 0.5-mile-long 138-kV transmission lines is estimated to be about $51 million. Annual maintenance costs would be about $10,000 to $20,000.

S.4.3 No Action Alternative

Under the No Action Alternative, BPA would not build the proposed transmission line or the proposed substations. Without the new line, it is expected that voltage stability and reliability problems on the transmission grid in this area could continue. Further, the growing energy requirements of Southeastern Idaho and Wyoming's Jackson Hole valley area may not be met.

S.5 Alternatives Considered but Eliminated from Detailed Study

During the scoping process, BPA considered a wide range of potential alternatives for the Project. Alternatives that did not meet the need and purposes, including whether they were practical or feasible, or would obviously have greater adverse environmental effects than the proposed project, were eliminated from detailed study. The following alternatives did not meet the need and purposes.

Higher Voltage Transmission Line Alternative

BPA considered an alternative that would allow a direct connection of the proposed transmission line to PacifiCorp's existing 345/138-kV Threemile Knoll Substation rather than constructing the proposed 138/115-kV Hooper Springs Substation. To allow this direct connection, this alternative would require that the proposed transmission line be constructed as a 138-kV line instead of as a 115-kV line as currently proposed. This alternative also would require that LVE's existing Lanes Creek Substation be expanded to accommodate the necessary 138/115-kV transformer banks for the proposed transmission line, rather than locating these facilities at the proposed Hooper Springs Substation. The structures under this alternative would be taller than the 115-kV structures under the North Alternative, which would result in a small increased impact on visual resources. Further, the 138-kV line would require a 150-foot-wide ROW, which would require additional ROW clearing in those areas containing incompatible vegetation types (such as forests). This alternative also would require surface disturbance for substation equipment in a previously undisturbed area. Given these potentially greater environmental effects, this alternative was considered but eliminated from study in this EIS.

Blackfoot River Road Route Alternative

This transmission line routing alternative was a variation of the four routing options considered in detail in the 2009 Preliminary EA and also being considered in this EIS. It generally followed the same transmission line routes as the South Alternative and route options, except for a routing variation where these alternatives would have first crossed Blackfoot River Road near the existing power substation at the intersection of Haul Road and Blackfoot River Road. After studying this route, it was eliminated because it would result in much greater impacts on wetland areas than the South Alternative, and would only shift (rather than lessen) land use impacts on other landowners. For these reasons, this alternative was considered but eliminated from detailed study in this EIS.

Goshen-Lanes Creek Transmission Line Alternative

BPA considered an alternative of constructing a new 161-kV transmission line from PacifiCorp's Goshen Substation near Idaho Falls, Idaho to a connection with LVE's existing transmission system at a point near Lanes Creek, Idaho, about 10 miles southeast of Grays Lake National Wildlife Refuge. Because this alternative would require adding shunt capacitors to the system and would be much longer than other alternatives (it would be about 52 miles long), its cost would be much greater than the North or South alternatives. The additional miles of ROW would require more vegetation clearing than other alternatives potentially creating greater impacts on land use, vegetation, wildlife, and other resources. Finally, this alternative would connect to the Goshen Substation. At this point in time, any additional interconnections to this substation would be difficult to configure and could result in reliability problems. This alternative was eliminated from further consideration because of the cost, potential environmental impacts, and reliability issues.

Alternative BPA Substation Sites

BPA considered other possible locations for its proposed Hooper Springs Substation that would connect the proposed transmission line to PacifiCorp's existing Threemile Knoll Substation. All of these locations would be farther away from the Threemile Knoll Substation than the currently proposed location, and thus would require longer transmission line connections and would increase costs. Because of the increased costs and the potential for increased environmental impacts from longer transmission line connections, BPA eliminated these sites from further consideration.

Non-wires Alternative

BPA considered whether a non-transmission alternative would meet the project need and purposes. The 2009 Preliminary EA summarizes the consideration of non-wires alternatives for the Project at that time. As described in the EA, there was significant uncertainty as to whether sufficient non-wire measures could be implemented on a basis to fully meet the need to serve LVE during peak loads, which are continuing to increase. For this reason, non-wires alternatives were considered but eliminated from detailed study in the 2009 Preliminary EA.

Subsequent to the 2009 EA, BPA further assesses potential non-wires alternatives for the Hooper Springs Transmission Project that could reduce and meet winter peak power demand and determine the length of time these measures could help maintain electrical reliability. Overall, the combination of potential non-wires measures could at most defer, but not eliminate, the need to construct a transmission line, and there is a fundamental level of uncertainty about whether these measures could be fully implemented in time to address the growing need for the Project. Given these factors, BPA has eliminated the non-wires alternative from further detailed consideration in this EIS.

S.6 Affected Environment

The Project is located in Caribou County in southeastern Idaho. Populated areas include the cities of Soda Springs, Henry, and Wayan although most of the project area is sparsely populated with development mainly limited to rural homes, ranches, and farms interspersed with parcels of federal and state lands. Land uses on private land in the project area include agricultural (rangeland and cultivated cropland), with some land enrolled in conservation easement programs. Land uses on federal lands include phosphate mining and grazing leases, along with developed recreational areas and areas managed for timber harvest or wildlife habitat. The South Alternative crosses several areas of past, current, and potential future mining. While the North Alternative does not cross any mining areas, it does passes in close proximity to several.

Both the North and South alternatives primarily cross private land (approximately 21 miles of the 32-mile North Alternative corridor and about 15 miles of the 22-mile South Alternative corridor), in addition to a mix of state land (about 4.2 miles for the North Alternative and 1 mile for the South Alternative). Federal land crossed by the North Alternative includes about 5.5 miles on C-TNF lands managed by the Soda Springs Ranger District; slightly less than 2 miles crossed on lands managed by the BIA; and approximately 0.5 mile of BLM lands managed by the Pocatello Field Office. Federal land crossed by the South Alternative includes about 3.4 miles on the C-TNF also managed by the Soda Springs Ranger District and approximately 2.7 miles of BLM lands also managed by the Pocatello Field Office. Agriculture is a major economic force in the area. Also driving the local economy are phosphate mining, construction, manufacturing, health care, government and professional services, recreation and tourism, and retail and food services. Phosphate mining and processing have been sources of soil and groundwater contamination in Caribou County with some contaminated mine sites within and adjacent to the North and South alternative corridors.

As is typical of a mostly rural area, local motorists are served primarily by two-lane state and county roads. Idaho State Highway 34 (Highway 34) is the major rural collector highway within the project area. Other local transportation facilities include road systems owned and maintained by the C-TNF, the BLM, and the Bureau of Indian Affairs (BIA).

The project area's main waterways include the Blackfoot River, the Little Blackfoot River, Gravel Creek, and Meadow Creek. In addition, there are many scattered wetlands and intermittent streams throughout the area. The Blackfoot River supports a resident population of native cutthroat trout.

Vegetation communities within the North and South alternative corridors include sagebrush steppe, rangeland, cropland, woodlands (including riparian woodlands), forest, and wetlands. Converted lands used for grazing or crop cultivation, with interspersed areas of intact sagebrush steppe habitat, are the predominant vegetation type throughout much of the project area. Conifer- and aspen-dominated forest types are prevalent on C-TNF lands at the northeastern extent of the North Alternative corridor and at the eastern extent of the South Alternative corridor. No federally protected or candidate plant species are known to occur within the North or South alternative corridors or substation sites.

The project area provides habitat for a variety of wildlife. There are no federally listed threatened or endangered species likely to occur within the North or South alternative corridors, but several federal or state "species of concern" have the potential to occur because of habitat types found.

Recreational activities in the project area, and Caribou County as a whole, include camping, fishing, hunting, hiking, boating, wildlife viewing, cross-country skiing, and off-highway vehicle use. The Blackfoot River provides a world-class trout fishery. BLM lands surrounding the Blackfoot River and Reservoir are managed as part of the Blackfoot Reservoir Special Recreation Management Area (SRMA), where the main recreational use point is the Blackfoot River Reservoir and associated camping, fishing, boating, and bird watching opportunities.

Southeastern Idaho has been populated by various cultural groups for at least the past 12,500 years. Historical data demonstrate continuous use of the project area from the time of the first Euro-American exploration through the present. Several historic roads and trails also exist in the project area, and may be crossed by one or both alternatives.

S.7 Environmental Impacts

The following sections provide a summary of the environmental impacts from the North and South alternatives and the No Action Alternative by potentially affected resource. Mitigation measures to lessen impacts are listed in Table 2-4 and at the end of each resource chapter.

S.7.1 Land Use

Construction of the transmission lines and access roads under the North and South alternatives would temporarily disrupt land uses along the corridor in staging areas and at pulling/tensioning sites; it would permanently remove land from current uses for structure footings, access roads, and the Hooper Springs Substation, and could permanently limit some land uses and activities within the North and South alternative corridors. Generally, existing agricultural uses could continue along the line after construction. Activities such as logging and mining, which are considered incompatible with operation of the transmission line, would be prohibited. However, the area where these activities would be restricted would be less than 25 percent of either alternative corridor. Changes in land ownership and land use entitlements would result from purchase of the Hooper Springs Substation site and ROW easements on private land. Mitigation measures implemented would lesson impacts on land use; overall, the impacts from either the North or the South alternative during construction would be ***low***.

Long-term impacts during operation and maintenance for both the North and South alternatives are expected to be ***low*** to ***none***, although impacts on proposed future mining from the South Alternative could be ***low*** to ***moderate***.

The Long Valley Road Option would not cross state lands but would cross agricultural land uses, resulting in a ***low*** to ***moderate*** impact during construction. The North Highland Option would cross generally the same lands as the North Alternative, but would remove approximately 1.5 miles of ROW from private grazing lands and add approximately 1.2 miles of ROW to C-TNF lands. Impacts from this routing option would be ***low***.

Impacts on land uses under Options 1 and 2 would be the same as the South Alternative because these options would cross generally the same private, state, and federal lands. Land use impacts for these two options would be ***low*** during construction and ***low*** to ***moderate*** where forested lands are crossed. Construction of the western portions of Options 3 and 4 would occur in private agricultural lands west of Highway 34 and would result in additional short-term impacts on agricultural and grazing uses. Land use impacts for these two options would be ***low*** to ***moderate*** during construction where agricultural or forested lands are crossed. Options 1 through 4 would potentially have the same ***low*** to ***moderate*** impacts on proposed future mining as the South Alternative.

S.7.2 Recreation

Construction of the North or South alternative would result in short-term disruption to recreational uses and activities within the project area. Although there would be no direct impacts on developed recreational facilities because there are no developed facilities within either the North or South alternative corridors, indirect impacts on recreational facilities could include the use of USFS roads by construction vehicles and workers during construction; temporary delays and road closures; and diminished access to recreational use areas. Additionally, lands and roads in close proximity to the proposed transmission line may be closed to users for the duration of the construction period for safety and security reasons. Direct impacts on recreational users would include noise from construction, construction vehicles, equipment and workers; wildlife disruption; and dust from construction. The majority of the proposed line would be close to existing roadways so that recreational use further from roads would remain relatively unaffected. Following construction, access to recreational facilities and roads would return to normal.

Overall, construction of either the North or South alternative would have short-term, ***low*** to ***moderate*** impacts on recreation. The presence of the cleared ROW and access roads would not be expected to cause a noticeable change in recreational use in the long term; therefore, the impacts of the both the North and South alternatives during operation and maintenance are expected to be ***low*** to ***none***.

Impacts on recreation from the Long Valley Road and North Highland options would be similar to those under the North Alternative (***low*** to ***moderate*** during construction and ***low*** during operation and maintenance).

Impacts from Options 1 through 4 would be the same as the South Alternative. The impacts on recreational use from the presence of construction equipment would be ***low*** to ***moderate*** and limited to the duration of construction. The presence of the cleared ROW and access roads would have a ***low*** impact on recreational users.

S.7.3 Visual Resources

The North Alternative would require the installation of both wooden H-frame and steel structures. The South Alternative would only include the installation of steel structures. During construction of the line, visual impacts from both alternatives would be short term and ***low*** to ***moderate*** because of the presence of construction equipment and materials along either alternative would attract attention.

During operation, both the North and South alternatives would appear most visible where the structures cross the skyline or are in viewers' foregrounds, as well as near highways and small populated areas, and across agricultural landscapes. Because the transmission line under the North and South alternatives would be visible along Highway 34, both alternatives would likely have a long-term, ***low*** to ***moderate*** impact on the landscape in this primarily privately owned area. In the Wayan area of the North Alternative corridor, short- and long-term impacts on private and federal lands would be ***moderate*** to ***high*** because the transmission line would be constructed in a relatively undeveloped and natural setting. On other federal lands along the North Alternative, impacts on visuals would be ***low*** to ***moderate*** because wood pole structures for a portion of the North Alternative would reduce the line's visibility to some extent and topography may hide portions of the line.

Impacts on visual resources under the South Alternative would be short term and ***low*** during construction and ***low*** to ***moderate*** during operation. While few residences are present along this alternative, the steel structures would create an obvious human made or industrial element to the landscape.

In the vicinity of the proposed Hooper Springs Substation, the visual character of the land has already been largely altered and neither alternative would substantially change the current character of the landscape; impacts would be ***low***.

Under the North Highland Option, both the short- and long-term impacts would be similar to the North Alternative; however, the transmission line would not be visible from Highway 34 between line miles 30 and 32. The North Highland Option would have long-term, ***low*** to ***moderate*** impacts on visual resources in the option area and short-term, ***moderate*** impacts during construction.

Impacts on visual resources from Options 1 through 4 would be similar to those under the South Alternative.

S.7.4 Vegetation

Impacts on vegetation would include vegetation removal, changes in vegetation type, and the potential spread of noxious weeds. At structure sites, along new permanent access roads, and at the Hooper Springs Substation site, vegetation would be permanently removed. In some ROW areas, trees would need to be removed. Habitat fragmentation could occur where removal of canopy trees reduces habitat suitability for plant species that grow in non-edge forest habitats. Although vegetation would be allowed to reestablish in most disturbed areas, these areas could be vulnerable to noxious weed infestations in the short term; however, mitigation measures would be implemented to reduce weed spread.

The North Alternative would require the permanent removal of approximately 110.6 acres of native vegetation. The South Alternative would require the permanent removal of approximately 79.4 acres of native vegetation. The North Alternative would require the clearing of approximately 38.8 acres of aspen-dominated forest and 64.8 acres of conifer-dominated forest. The South Alternative would require the clearing of approximately 6.3 acres of aspen-dominated forest and 42.6 acres of conifer-dominated forest. These impacts would be long term. Roads would be permanent, prohibiting reestablishment of native vegetation. The ROW would be maintained in low-growing vegetation throughout operation of the transmission line, resulting in long-term conversion of forested vegetation. Therefore, both the North and South alternatives would result in long-term, ***moderate*** impacts on forested vegetation communities. However, the North Alternative would result in the removal of 54.7 more acres of forested vegetation compared to the South Alternative.

The proposed Hooper Springs Substation would be constructed on approximately 6.8 acres of tilled agricultural land, which is not a native vegetation type, and would not represent an impact on native vegetation communities. There have been no documented occurrences of special status plant species within either the North or South Alternative corridor; therefore, the potential for impacts on special status plant communities would be ***low.*** The majority of both the North and South alternative corridors traverse grassland and sagebrush vegetation communities with no tall-growing vegetation. Low-growing vegetation in these areas would not be removed. Operation and vegetation management over the long term would also result in ***low*** impacts under either alternative.

Impacts under the Long Valley Road Option and the North Highland Option would be similar to those described above for the North Alternative.

Impacts on vegetation from Options 1 through 4 would be similar to those under the South Alternative.

S.7.5 Geology and Soils

Impacts on geology and soils from the North and South alternatives would include loss of farmland soils and topsoil removal, increased erosion rates, blasting for temporary roads and/or structure sites that may produce rocks, and potential exposure to bedrock or mining tailings containing elevated selenium levels. The potential impacts of the North and South alternatives would not differ appreciably. Approximately 6.8 acres of agricultural fields would be taken out of production to construct the Hooper Springs Substation and associated structures (BPA 2009). Soil productivity on the 6.8 acres would be lost; however, soils present on the proposed substation site are common soil types in Caribou County and are not prime farmland soils. Prime farmland soils within the North Alternative corridor are found north of the proposed Hooper Springs Substation site (between line mile 1 and 2), along the southeast and east side of the Blackfoot Reservoir (between line mile 11 and 20), and north of the North Alternative corridor crossing of Gravel Creek (between line mile 26 and 28). The corridor for the South Alternative and route options cross areas of prime farmland in the western portion of the project area, between South Alternative line miles 1 and 11.

Both alternatives are expected to have ***low*** to ***no*** impacts on geologic resources or geologic hazards, as the amount of construction activity and structures proposed would be limited and localized. Soils within the North and South alternative corridors could be susceptible to liquefaction during seismic events and landslide hazard potential given current mapping, but chances of such events occurring would be small. Vegetation clearing would expose soils to direct rain and wind, but lower-growing vegetation, if left intact, should continue to provide protection. The extent to which tree clearing would expose soils depends primarily on the level of impact on lower-growing vegetation during logging activities.

Heavy machinery (logging trucks, graders, and excavators) and log movement would compact soils, causing a reduction in soil productivity, thus making it harder for plants to revegetate and increasing erosion potential. Little erosion would occur where terrain is level along most of the North and South alternative corridors. The potential for stormwater erosion in areas of hilly terrain where water flows is greater and could cause moderate impacts. Most at risk are slopes on C-TNF lands that exceed 40 percent. Potential impacts on exposed soils would continue to occur if soils were left bare or were slow to revegetate after construction. Localized changes in runoff and erosion patterns could occur due to placement or removal of soil for temporary access roads and leveling of structure sites. Soil erosion impacts from construction and operation of the transmission line under either the North or South Alternative would be ***low*** to ***moderate.***

Maintenance and vegetation management over the life of the line would create ***low*** to ***moderate*** impacts on soils for both alternatives.

The Long Valley Road and North Highland options would have similar impacts as the North Alternative on soils and soil productivity.

Impacts on soils under Options 1 through 4 would be similar to the South Alternative.

S.7.6 Water Resources, Floodplains, and Wetlands

Construction of the North and South alternatives would cause ground disturbance with the potential to affect waterways and groundwater. To minimize this impact, no structures would be located in waterways or floodplains. The North Alternative would span the Blackfoot River, Little Blackfoot River, Meadow Creek, and Gravel Creek. The South Alternative would span the Blackfoot River, Mill Canyon Creek, and several smaller unnamed tributaries to the Blackfoot River.

The impacts of the North Alternative on surface waters are expected to be ***low*** to ***moderate*** with implementation of mitigation measures, because of the need for tree removal and road construction within aquatic influence zones (AIZs) and riparian areas and the installation of culverts at access road crossings and a new bridge crossing on Meadow Creek. New and improved access road crossings for the South Alternative, including culvert installations, at intermittent waterbodies would result in the same impacts as those described for the North Alternative; ***low*** to ***moderate*** with implementation of mitigation measures.

The North and South alternatives both would have ***low*** to ***no*** impacts on groundwater resources because few wells are located within the corridors. Short- and long-term water quality impacts would be ***low*** for both alternatives due to the potential for reduced groundwater infiltration and increased sedimentation delivery associated with short- and long-term vegetation impacts. State water quality standards would not be impacted.

The North Alternative has the potential to result in about 0.05 acre of short-term impacts and approximately 1.2 acres of long-term direct impacts on wetlands. Short-term impacts from the North Alternative would result from temporary vegetation disturbance at structure construction sites and vegetation removal for temporary access roads. Long-term impacts would result from permanent access road construction and would be ***low*** to ***moderate***. No wetlands would be permanently lost for structure footings. The South Alternative has the potential to result in approximately 0.08 acre of short-term impacts and approximately 0.03 acre of long-term direct impacts on wetlands. Similar to the North Alternative, short-term impacts associated with the South Alternative would be ***low*** to ***moderate*** although long-term impacts would be ***low***.

Impacts on floodplains under the North or South alternatives would be ***low***, as any changes to natural floodplain functions would be expected to be small and localized.

Impacts associated with operations and maintenance for both alternatives are expected to be ***low***.

Impacts from the Long Valley Road Option would be similar to the floodplain and indirect surface and groundwater impacts described above for the North Alternative. The North Highland Option would reduce impacts on wetlands and perennial streams because the option would move the corridor to non-wetland areas. Impacts on water resources from the North Highland Option would be ***low***.

Options 1, 2, and 3 would have the same impacts as the South Alternative: ***low*** to ***moderate*** where new and improved access roads crossings require culverts or temporary work in wetlands and ***low*** where vegetation clearing or soil disturbance occurs. Option 4 would cross a large wetland complex and open water associated with Woodall Springs. Access road construction requiring wetland fill could result in ***moderate*** to ***high*** impacts if roads are permanent.

S.7.7 Wildlife

Impacts on wildlife from the North and South alternatives would be similar. Potential impacts on wildlife would be short- and long-term habitat modification resulting from construction of the proposed transmission line. Neither alternative would be expected to adversely impact federal threatened or endangered wildlife species. However, suitable habitat for some federal and state species of concern could be impacted and thus the North and South alternatives would have short- and long-term, ***low*** impacts on certain sensitive species. Short-term direct impacts on wildlife habitat would be associated with temporary vegetation disturbance at structure construction sites and vegetation removal for the construction of temporary access roads. Temporary construction-related noise impacts would be expected to have a short-term, ***moderate*** impact on some wildlife species because they could be temporarily displaced at a critical time causing impacts on overall reproductive success. Long-term impacts on wildlife habitat would be the permanent loss of habitat in those areas associated with permanent access road construction and structure footing installation, forested vegetation removal within the North and South alternative corridors, and the construction of the Hooper Springs Substation. In addition, while some individual game animals could be affected, neither alternative would be likely to result in any measurable impact on any big game species. Therefore, impacts on game animals associated with the construction and operation of the North or South alternative would be ***low***.

Impacts on forested wildlife habitats would be ***moderate***, due to the potential for long-term impacts on forested vegetation that would be both detectable and measurable. However, a network of forested habitat would remain at the regional scale to ensure no net loss of habitat function. Impacts on non-forested wildlife habitats within either the North or South alternative corridors would be ***low***; most impacts would be of short duration and localized and temporarily affected vegetation would be expected to grow back within two growing seasons.

Direct mortality impacts related to construction would be expected to be short term and ***low***, and limited to species that are less mobile than others. Both alternatives would likely have long-term, ***low*** to ***moderate*** impacts on avian species due to the potential of collision with the line, if, as part of the Project, BPA installs bird flight diverters on overhead ground wires in areas determined to represent the highest risk.

Operation and maintenance of both alternatives would require regular vegetation maintenance to ensure that tall-growing woody vegetation does not grow in the ROW and that permanent access roads remain drivable. Maintenance could include mowing, herbicide application, and mechanical cutting. As such, operation and maintenance would have a long-term, ***low*** impact on wildlife under either alternative because routine maintenance could result in temporary disturbance of wildlife including nesting birds and wintering big game; however, maintenance would only occur every few years and would be of short duration.

The Long Valley Road Option would result in the removal of less sage brush habitat and more cultivated habitat. Because cultivated land does not provide native habitat to wildlife, the routing option would have slightly less impact on wildlife than the route summarized above (impact would ***low*** to ***none***).

The North Highland Option would result in the removal of less sagebrush and grass-dominated habitat and more conifer and aspen-dominated habitat. Therefore, impacts would be lower for wildlife species that use sagebrush and grass-dominated habitat, such as the Columbian sharp-tailed and greater sage grouse, and greater for wildlife species that use conifer and aspen-dominated habitat, such as the northern goshawk and boreal owl. Nonetheless, overall impacts of this option would be similar to the North Alternative.

Impacts on wildlife from Options 1 through 4 would be similar to those for the South Alternative.

S.7.8 Fish

Fish would be impacted by any alterations to water quality and habitat resulting from either alternative. Potential impacts would be due to erosion and related sedimentation of streams, pollution from petroleum spills, stream alterations, and riparian vegetation (shade) removal. The North and South alternatives would include activities that have the potential to increase sedimentation and water temperatures in perennial streams. Both alternatives would include activities with similar potential to increase sedimentation and water temperatures.

The proposed transmission line would span a number of streams within the North and South alternative corridors, but no structures would be constructed and no vegetation clearing would occur within riparian areas. All tree removal would be upland from stream edges and would not impact shading on water surfaces. The North Alternative would have ***no*** impact on fish in the Blackfoot River or the Little Blackfoot River because no road work, structure construction, or vegetation clearing would occur in the riparian areas, and there would be no new road-stream crossings on these rivers. Likewise, the South Alternative would have ***no*** impact on fish in the Blackfoot River because no road work, structure construction, or vegetation clearing would occur in the riparian areas, and there would be no new road-stream crossings on these rivers.

New road-stream crossings may be required on smaller tributaries for construction of permanent and temporary access roads. Culverts or bridges would be constructed as necessary in a manner that allows for fish passage. The North Alternative would require bridge removal and replacement on Meadow Creek, which would have a short-term, ***low*** impact on fish because the proposed new bridge could cause shoreline and instream disturbance that would increase sedimentation and turbidity. The proposed bridge could have a beneficial impact on fish by reducing bank erosion in the long term. Construction of the North Alternative at Gravel Creek would not result in any impacts on aquatic habitat and associated fish species. Construction of the South Alternative would have potential to affect fewer fish-bearing streams, but in general would have ***low*** short-term impacts on fish, similar to the North Alternative.

Operation and maintenance would occur over the life of the transmission line for both the North and South alternatives. Most impacts would result from increased turbidity due to soil-related impacts on water quality and corresponding fish habitat. It is expected that for both alternatives those impacts would be ***low***.

Under the Long Valley Road Option, there would be ***no*** impact on fish or their habitat in the Little Blackfoot River. The North Highland Option would not cross aquatic resources or fish habitat. Therefore, the North Highland Option would have ***no*** impact on fish or fish habitat.

Options 1, 2, and 3 would result in the same impacts on fish and fish habitat as those described for the South Alternative's crossing of the Blackfoot River and its tributaries (short term and ***low***). Option 4 would impact a wetland complex and open water bodies associated with Woodall Springs causing unavoidable impacts on fish and fish habitat. Access roads, structures, and construction vehicle use would increase sediment loading, turbidity, and temperature in fish-bearing streams and water bodies. Short-term impacts during construction would be ***moderate*** to ***high*** with the use of BMPs. Long-term impacts would be ***moderate***.

S.7.9 Cultural Resources

BPA would try to site transmission structures and access roads to avoid cultural resource sites along the corridor if documented during cultural resource surveys. Structure construction impacts would be limited to a relatively small area adjacent to the transmission line structures. Road construction and improvements are activities that have the most potential to disturb unknown cultural resources. Prior to construction, the corridor for either alternative would be surveyed for the presence of cultural and archaeological sites, and sites would be delineated both by surface observations and subsurface testing to avoid physically impacting sites during construction. Trained cultural resource monitors would be present during construction to ensure unidentified sites are not inadvertently impacted. The anticipated overall impacts of either the North Alternative or the South Alternative on cultural resources would be ***low***.

Both alternatives could have impacts on cultural resources during operation and maintenance of the proposed transmission line. Once maintenance activities are identified, site-specific surveys would be conducted when necessary and described in subsequent documentation. Based on the typical type of maintenance activities it is unlikely that impacts on cultural resources would exceed ***moderate***.

The Long Valley Road Option and the North Highland Option would have impacts on cultural resources similar to the North Alternative.

Under Options 1 through 4, the potential impacts on cultural resources would be similar to those under the South Alternative.

S.7.10 Socioeconomics

Both the North and South alternatives could potentially impact private farms and ranches. It is likely that croplands and grazing lands would be temporarily disturbed and agricultural activities would be temporarily disrupted during construction. The impacts on private croplands and agricultural activities would generally be the same for the North and South alternatives. The Long Valley Road Option would place an additional 4.8 miles of the North Alternative corridor on private agricultural lands. In the long term, however, most of these lands would not be affected. Neither alternative would result in the loss of large amounts of land from any single property, and would not constrain any agricultural uses in the long term. Therefore, the potential impact on the agricultural industry along the route would be short term, adverse, and ***moderate***, but long-term adverse impacts on agriculture would be ***low*** to ***none***.

Construction of either alternative would bring some jobs and income to the area, and workers temporarily residing in the local communities would spend a portion of their earnings in the communities; this would stimulate the local economy and contribute to sales and tax receipts. However, since the number of workers would be small, there would be a short-term, ***low*** beneficial impact on the local economy.

The North Alternative would not cross any past, present, or potential future mining areas or leases and therefore would have ***no*** impact on the mining industry; however, the South Alternative corridor would cross several past, current, and future potential mining sites. The reduction in mining areas under the South Alternative could result in long-term, local ***low*** to ***moderate*** impacts, depending on the value of the resource that would be no longer accessible to the mining industry.

Some impacts on property values (and salability) might occur on an individual basis as a result of the new transmission line. However, these impacts would be highly variable, individualized, and unpredictable. Neither alternative is expected to cause long-term, negative impacts on property values along the proposed route or in the general vicinity. Impacts unrelated to the Project, along with other general market factors, are already reflected in the market value of properties in the area. These conditions are not expected to change significantly. As a result, negative impacts on property values are expected to be ***low*** and short term. Overall, impacts on the local and regional economy as a result of either alternative would be ***low***.

The Long Valley Road Option and the North Highland Option would have similar ***low*** impacts on socioeconomic resources.

Options 1 through 4 would have similar ***low*** to ***moderate*** overall impacts on socioeconomic resources.

S.7.11 Transportation

During the construction period, both the North and South alternatives could cause temporary impacts on motorists resulting from increased traffic volumes with possible delays and road closures, along with possible wear and tear to public roadways from heavy construction vehicles accessing the Project. Highway 34 would likely be the most traveled road during the construction period if the North Alternative is selected. The South Alternative would impact traffic on Highway 34 to a lesser extent, but would create traffic impacts on Blackfoot River Road.

Daily peak construction activities and movement of construction vehicles would temporarily increase traffic and reduce the overall speed of travel. Traffic delays may occur, but these would be periodic, short term, and limited to specific areas and times of day. The use of all other county, local, C-TNF, and BLM roads for construction traffic would be limited to roads necessary to access staging areas and work sites. Based on the relatively low average daily traffic counts on such roads, and the relatively short-term use any one road is likely to receive, temporary traffic delays are likely to occur at localized spots, but only while construction is taking place in adjacent or nearby areas. Impacts from the North and South alternatives would be short term and ***low***.

Operation and maintenance of the proposed transmission line and substation would not be expected to disrupt traffic or impact transportation infrastructure in any way and would be expected to be ***low*** for either alternative.

The Long Valley Road Option and the North Highland Option would have similar ***low*** impacts on traffic and road conditions as discussed for the North Alternative.

Options 1 through 4 would have similar ***low*** impacts on traffic and road conditions as the South Alternative.

S.7.12 Noise

Noise levels in the project area are generally very low. In more developed areas, traffic and noise associated with human activity are major contributors to background noise. Construction of the North and South alternatives would generate elevated noise levels. Noise levels also may periodically increase during operation and maintenance. This noise would have the potential to affect nearby residences, recreational users, wildlife, and other receptors. Noise levels and related impacts would be similar for the North Alternative and the South Alternative.

Potential sources of noise during the construction phase of either alternative would include construction of access roads and foundations at each structure site; structure site preparation; construction of steel or wooden structures; helicopter assistance during structure construction and stringing of conductors; and potential blasting. Noise impacts during construction would be ***moderate*** to ***high***, although intermittent and short term. Construction noise would be localized (affecting a few residents or business owners at a time) and temporary, as crews would complete line segments and move on.

Overall noise impacts during operation of the Project are expected to be negligible for both the North and South alternative. In areas where homes or businesses are already near existing lines, the potential for corona noise (hum and/or crackling) from the energized conductors would remain the same. In areas where homes or businesses would be near new ROW (e.g., no transmission line currently exists), corona could be audible but would be rare, as it occurs most often during foul weather and is typically associated with transmission lines in excess of 238-kV. About twice annually, a helicopter would fly the line to inspect for problems or repair needs.

Potential noise impacts associated with operation and maintenance activities would be considered ***low*** for both alternatives.

The Long Valley Road Option and the North Highland Option would have the same noise impacts as the North Alternative.

Options 1 through 4 would have the same noise impacts as the South Alternative.

S.7.13 Public Health and Safety

The principal impacts of both the North and South alternatives on public health and safety would be related to the potential mobilization of hazardous waste from excavation and handling of contaminated soil, which could result in exposure to the environment, workers, and the general public, along with public exposure to electric and magnetic fields (EMF). The North Alternative corridor is located approximately 3,500 feet east of the footprint of the Henry Mine and does not come into direct contact with waste dumps, seeps, or mine pits. Because the transmission line would not excavate in areas of known contamination, impacts related to hazardous waste associated with mining areas would be ***low***. Four mines crossed by the South Alternative corridor are currently undergoing investigation as potential Superfund sites under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). While the transmission line and access roads would be designed to avoid areas of contamination, construction activities could come into direct contact with waste dumps, seeps, or mine pits. If contaminants are disturbed, impacts on workers, the general public, and environmental features from the South Alternative could be ***moderate*** to ***high***. Likewise, if ground-disturbing maintenance activities result in disturbance and release of contaminants during the operating phase of the South Alternative, the resulting impacts would be ***moderate*** to ***high.***

Maximum and average values expected for electric fields at the edge of the North Alternative ROW would be below BPA's guidelines of 5.0 kilovolts per meter (kV/m). These electric field levels would be comparable to or less than those from existing transmission lines in the area and elsewhere. Overall, electric field level impacts under the North Alternative would be ***low.*** Transmission line magnetic fields would approach common indoor ambient levels a few hundred feet beyond the edge of the ROW. Overall, impacts from magnetic fields outside of the North Alternative ROW would be ***low***. As with the North Alternative, magnetic fields would fall off rapidly beyond the edge of the South Alternative ROW. The potential for impacts associated with elevated magnetic fields for the South Alternative would be ***low***.

For both the North and South alternatives, BMPs would be implemented to manage construction-related hazardous materials such as vehicle fuels, oil, hydraulic fluid, and other vehicle maintenance fluids, and to avoid releases and spills. If a release should occur, BMPs would be in place to ensure such releases are contained and cleaned up promptly in accordance with all applicable regulations. As a result, impacts associated with construction-related hazardous materials for both alternatives would be expected to be ***low***.

As with the North Alternative, both the Long Valley Road Option and the North Highland Option would span waterbodies downgradient of mining areas and would have ***low*** impacts related to hazardous waste associated with mining areas. EMF impacts would also be ***low***.

Options 1 through 4 would have the same impacts on public health and safety as the South Alternative including possible ***moderate*** to ***high*** impacts if contaminants are disturbed.

S.7.14 Air Quality

Construction activities associated with the North and South alternatives could create dust as a result of road building and grading, on-site travel on unpaved surfaces, work area clearing and preparation, and soil disrupting operations. Air quality impacts associated with both the North Alternative and the South Alternative are expected to be localized and temporary, and would be controlled as practicable. Wind erosion of disturbed areas could also contribute to fugitive dust until revegetation of these areas occurs. Heavy equipment and vehicles would emit carbon monoxide, carbon dioxide (CO_2), sulfur oxides, and other air pollutants. The amount of pollutants emitted from construction vehicles and equipment would be small relative to existing air pollution sources in the airshed; therefore, the expected impacts would be short term and ***low***.

Air quality impacts during operation and maintenance would be the same for both the North and South alternatives. Impacts would be long term in nature but non-existent or low in intensity. Quantities of potential emissions due to the occasional operation of maintenance vehicles on access roads would be very small, temporary, and localized. Overall, both alternatives would have ***low*** to ***no*** air quality impacts.

Under the Long Valley Road Option and the North Highland Option, air emissions and dust generation would be ***low*** and similar to those described above.

Options 1 through 4 would have ***low*** impacts similar to those described above for the South Alternative.

S.7.15 Greenhouse Gases

The Project could have the potential to contribute to greenhouse gas (GHG) concentrations. Construction vehicles and equipment would generate emissions of gases such as CO_2 that are known to contribute to global warming. The removal of trees and other vegetation that act to sequester carbon would result in lost carbon storage.

Vegetation removal associated with the North Alternative would result in lost carbon storage equivalent to 6,747 metric tons of CO_2. Construction of the North Alternative would be estimated to produce about 12,244 metric tons of GHG emissions over the course of one year. Vegetation removal associated with the South Alternative would result in lost carbon storage equivalent to 3,685 metric tons of CO_2. Construction of the South Alternative would be estimated to produce about 8,081 metric tons of GHG emissions over the course of one year. The carbon impacts from either Alternative would be well beneath the U.S. Environmental Protection Agency's (EPA) mandatory reporting threshold of 25,000 metric tons of CO_2 equivalent (CO_2e) GHG emissions per year. Based on these estimates, the contribution to GHG levels during construction would be lower for the South Alternative than the North Alternative given the reduced area for construction; however, the impacts for both alternatives would be ***low***.

Operation and maintenance of the line would be expected to produce about 126 metric tons for the North Alternative and approximately 84 metric tons for the South Alternative over the life of the Project. Thus, the GHG contributions from these activities would be negligible. Overall, the South Alternative would have slightly lower GHG impacts than the North Alternative, but both alternatives would have ***low*** to ***no*** impacts on GHG concentrations.

Under the Long Valley Road Option, GHG emissions would be slightly larger, but would still result in ***low*** impacts on GHG emissions. Under the North Highland Option, GHG emissions would be slightly reduced and would still result in a ***low*** impact on GHG emissions.

Under Options 1 through 4, GHG emissions would be similar to the South Alternative, but would still result in ***low*** impacts on GHG emissions.

S.8 Cumulative Impacts

Cumulative impacts are environmental impacts that result from the incremental impact of an action, such as one of the proposed alternatives, when added to other past, present, and reasonably foreseeable future actions.

Past actions that have affected natural and human resources in the project area include conversion of land to agricultural uses; residential, commercial, and other development; mining operations; logging; road construction; and installation of transmission and distribution lines and related facilities. Currently and in the reasonably foreseeable future, many of these activities will continue and grow. New development will continue as population growth and demand for resources increase. If a decision is made to build the North or South alternative, the selected alternative would add to these impacts with construction and operation of additional transmission line facilities and the new substations.

The Hooper Springs Transmission Project's incremental contribution to potential cumulative impacts on resources would vary as follows.

Land Use: The Project would add to the ongoing development of utility-related land uses in the project area. Based on the current land use within the project area, it is unlikely that changes in land use as a result of the Project would contribute to the cumulative impacts on land use in a meaningful way.

In areas of past mining disturbance along the South Alternative that are currently engaged in reclamation activities, construction of the transmission line could disrupt some activities. The South Alternative would also potentially limit the types of mining activities that could occur within the corridor due to safety and reliability issues related to the transmission line. The siting and operation of the transmission line could limit proposed mining operations, as mining would likely not be allowed within the transmission line corridor or access roads due to safety, accessibility, and reliability issues. However, based on the large amount of mineral lease areas available within the project area, it is unlikely that limiting mining operations within the South Alternative corridor would contribute to the cumulative impacts on land use in a meaningful way.

Recreation: The temporary disturbance during construction and the long-term presence of the North or South alternative ROW would not contribute in a meaningful way to cumulative impacts on recreation.

Visual Resources: Overall, the western portion of both alternatives would contribute incrementally, though in a relatively minor way, to potential cumulative visual impacts in that area, due to their location in an already developed area generally in the vicinity of existing transmission lines. However, the eastern portions of both alternatives would pass through more undeveloped areas and require new cleared ROWs. These portions of both alternatives thus would have the potential to have a relatively high level of contribution on cumulative visual impacts from vantage points along the transmission line ROW.

Vegetation: Construction and operation of the North and South alternatives would not contribute to cumulative impacts on special status species in the project area. Soil and vegetation disturbance associated with the North and South alternatives would contribute to potential cumulative spread of noxious weed populations. However, the potential contribution of these alternatives would be minimized by project-related mitigation measures, such as revegetation measures. The Project thus would result in minor contributions to the potential cumulative impacts on noxious weed populations in the project area.

Geology and Soils: Through the implementation of mitigation measures described in Section 3.5, Geology and Soils, the North and South alternatives would add a small quantity of soil compaction and erosion during construction and soil loss due to structure and access road placement. Overall, the Project's contribution to the cumulative soil compaction, erosion, and loss in the project area would be minor.

Water Resources, Floodplains, and Wetlands: Construction and operation of the North Alternative and South Alternative would contribute in a relatively minor way to potential cumulative sediment input and riparian and vegetation disturbance along surface waters and wetlands. Further, wetland fill associated with structures and access roads would have a minor contribution to cumulative wetland fill in the overall project area.

Wildlife: Construction and operation of the North or South alternative would contribute incrementally to potential cumulative impacts on special-status wildlife species through short- and long-term habitat avoidance, incidental mortality, and habitat alteration in the alternative corridors. Because the amount of wildlife habitat impacted and the duration of wildlife disturbance by either the North or South alternative would be minor compared to available habitat at a regional level, the construction and operation of either one of these alternatives would contribute little to cumulative impacts on special-status wildlife species at the regional level**.** Overall, due to the low impact of the North and South alternatives on big game winter range, the Project would result in a minor contribution to cumulative disturbance and habitat fragmentation of winter habitat.

Fish: North and South alternative stream crossings would have a low, temporary impact on fish and their habitat. Therefore, project impacts when combined with ongoing grazing activities, mining, agriculture, and other actions would have a small contribution on the overall cumulative impacts on fish resources in the project area.

Cultural Resources: Although the Project would be implemented in such a way to avoid impacts on cultural resources there is the potential for impacts on previously undiscovered cultural resources or artifacts. Implementation of mitigation measures would lessen or avoid the potential for impacts on archaeological resources. However, the Project may still contribute incrementally to the adverse cumulative impact on cultural resources in the project area.

Socioeconomics: Construction of either the North or South alternative would not be expected to result in a measurable contribution to overall cumulative socioeconomic impacts.

Transportation: Because both the North and South alternatives would result in only small, short-term increase in traffic during construction, significant traffic delays are not expected; therefore, it is expected that Project would not be a major contributor to cumulative transportation impacts.

Noise: Noise from construction activities during the construction phase of the North or South alternative would result in temporary increases in sound levels beyond ambient levels, including noise from helicopters and blasting that may be experienced by area residents up to 1 mile from construction activities. The Project thus could contribute incrementally to noise in the project area, which would likely result in a temporary and intermittent cumulative noise impacts.

Public Health and Safety: The North Alternative would not directly cross any identified contaminated areas or mineral lease blocks; therefore, it is not anticipated that the North Alternative would result in the mobilization of contaminants. The South Alternative would cross identified contaminated areas and proposed mine areas; therefore, there is the potential for mobilization of contaminants resulting in considerable contributions to the cumulative impacts on public health. Mitigation as described in Section 3.13.4 would reduce the potential for disturbance of contaminants by construction.

Although the both the North and South alternatives would result in higher levels of EMF under and immediately near the proposed transmission line, it would not cumulatively increase the overall level of EMF exposure in the project area.

Air Quality: Air emissions from construction of the North and South alternatives would occur during the 16-month project construction period spread over 2 years. Emissions from either alternative would result in a temporary contribution to cumulative impacts on air quality. Air impacts from the either alternative over the long term would occur, but would be much lower than those experienced during construction. Overall, the Project's emissions would result in a small contribution to cumulative impacts on air quality, compared to the larger-scale emitters in the project area.

Greenhouse Gases: The North and South alternatives GHG concentrations would be low. Therefore, the concentrations estimated for the Project, when compared to the regional, national, and global rates, are negligible and comparatively insignificant.

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1 Purpose of and Need for Action

Bonneville Power Administration (BPA) is proposing to build a new, 115-kilovolt (kV) transmission line in Caribou County, Idaho. This proposed line would extend from a proposed new 138/115-kV BPA substation, referred to as the Hooper Springs Substation, near the city of Soda Springs, Idaho, to a proposed BPA connection facility that would connect with Lower Valley Energy's (LVE) existing transmission system in northeastern Caribou County (see Map 1-1). BPA also would construct an approximately 0.5-mile-long, single-circuit 138-kV transmission line between the proposed Hooper Springs Substation and PacifiCorp's existing Threemile Knoll Substation to connect the new line to the regional transmission grid. The proposed 115-kV transmission line, substation, and ancillary facilities are collectively referred to as the Hooper Springs Transmission Project (Project). BPA is considering a North Alternative including two route options, a South Alternative including four route options, and a No Action Alternative.

This chapter provides background concerning BPA and the Project, describes the need for action to which BPA is responding in proposing the Project, and identifies the purposes that BPA is attempting to achieve in meeting this need. This chapter also identifies the lead and cooperating agencies for this environmental impact statement (EIS) and provides a summary of the public scoping process that was conducted for the EIS and information about the scope and organization of this EIS.

BPA, as a federal agency, is required by the National Environmental Policy Act (NEPA) to consider the potential environmental consequences of its proposal before taking action, and to inform the public of those potential impacts. Preparation of this EIS assists in meeting those requirements.

1.1 Background

BPA is a federal agency within the U.S. Department of Energy (DOE) that owns and operates more than 15,000 circuit miles of high-voltage transmission lines in the Pacific Northwest. BPA's electrical transmission system transmits most of the Pacific Northwest's power to serve customers in Idaho, Oregon, Washington, western Montana, and small parts of California, eastern Montana, Nevada, Utah, and Wyoming. BPA sells transmission services in order to accommodate requests to transmit power across its transmission system. BPA's transmission customers – typically utilities, independent power producers, and power marketers – use these services to deliver power over BPA's transmission lines to their buyers. Users of power include public utility districts, municipalities, direct service industries (e.g. aluminum plants), and investor-owned utilities that in turn use their own facilities to provide electricity to homes, businesses, industries, and farms throughout the Pacific Northwest.

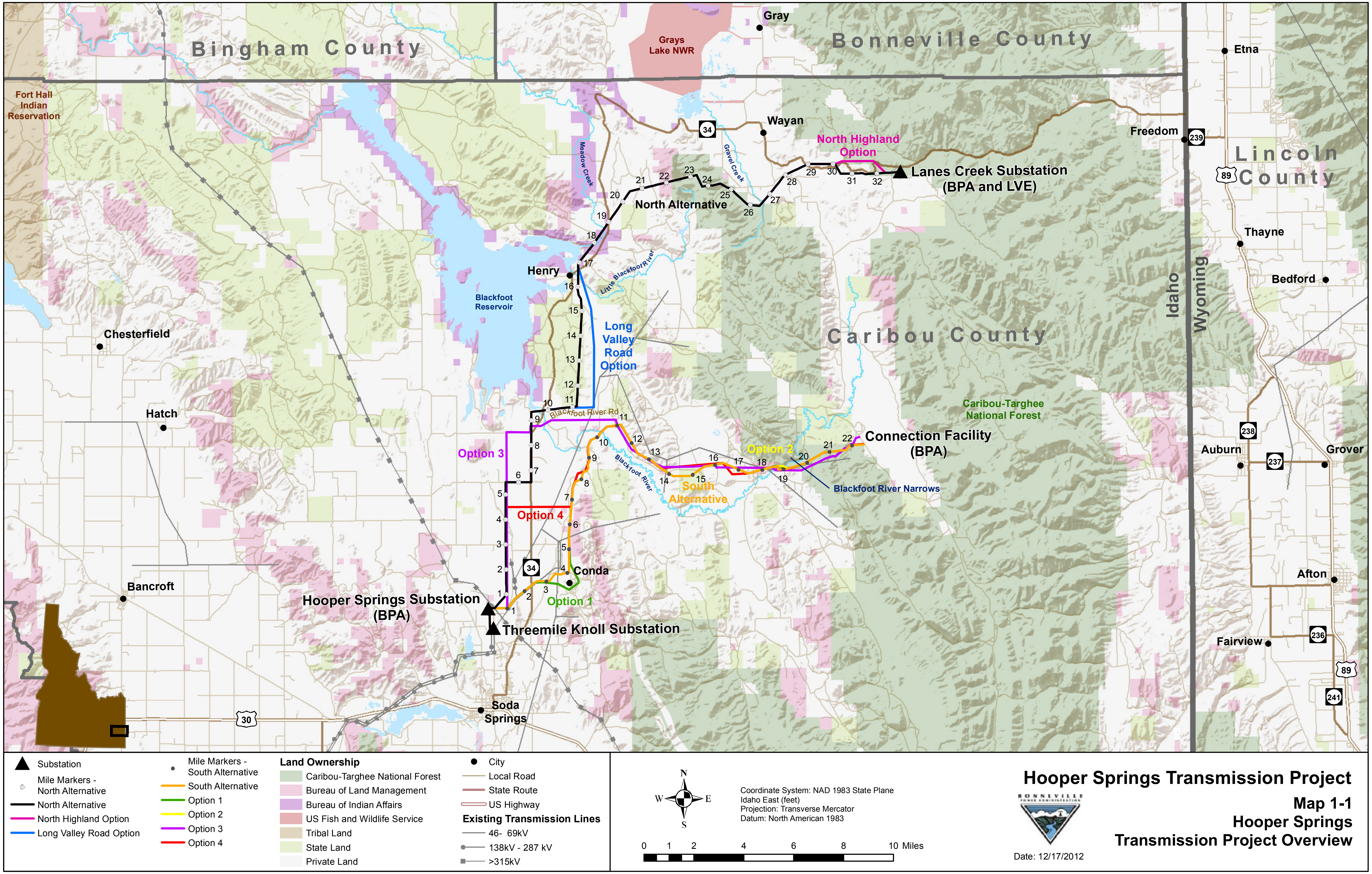
BPA has a statutory obligation to ensure it has sufficient capability to serve its customers through a safe and reliable transmission system. The Federal Columbia River Transmission Act directs BPA to construct improvements, additions, and replacements to its transmission system that the BPA Administrator determines are necessary to provide service to BPA's customers and to maintain electrical stability and reliability (16 United States Code [U.S.C.] 838b[b-d]).

LVE and Fall River Electric Cooperative (FREC) are customers of BPA who purchase all, or almost all, of the electric power required to serve their electrical loads from BPA. LVE and FREC provide electrical service to eastern Idaho, northwestern Wyoming, and southwestern Montana. BPA has an obligation to serve LVE and FREC loads under existing contracts. BPA also has an obligation to adhere to reliability criteria established by the North American Electric Reliability Corporation (NERC) and Western Electricity Coordinating Council (WECC). NERC, the national electric reliability organization, and WECC, the regional reliability organization, help coordinate the operation and planning of the bulk transmission system in the region. Utilities are required to meet the standards of both organizations when planning new facilities.

Existing BPA transmission lines that serve LVE and FREC include the Palisades-Goshen line, the Swan Valley-Goshen and Swan Valley-Teton lines, and the Goshen-Drummond line. BPA has completed various upgrades and other improvements of these transmission lines that have increased the voltage stability and reliability of the FREC transmission system and the northern portion of LVE's transmission system. However, reliability and voltage stability of the southern portion of LVE's transmission system is a concern. LVE's system experiences extreme peaks in electrical load during winter, when temperatures can drop to -50 degrees Fahrenheit (°F) and electricity is needed for heat. If a transmission line serving the southern portion of LVE's system were to lose service due to weather or other events, voltage instability could occur and LVE and FREC customers, including residential customers, could lose power and heat. Because such an outage would likely be associated with potentially life-threatening low temperatures, such an outage is a major concern. Further, these reliability concerns likely will continue and increase as electricity demand in LVE and FREC's service area increases.

In 2006, BPA developed a proposal to address the voltage stability and reliability concerns in the southern portion of LVE's transmission system and to meet projected load demands. The 2006 proposal involved construction, operation, and maintenance by BPA of the Hooper Springs Substation currently proposed, as well as the partial funding by BPA of Lower Valley's construction, operation, and maintenance and ownership of a new 22-mile-long, double-circuit 115-kV transmission line in Caribou County, Idaho similar to the current BPA South Alternative. BPA issued a Preliminary environmental assessment (EA) (DOE/EA-1567) for that proposed project in May 2009 (BPA 2009). Based on comments received on the 2009 Preliminary EA, BPA discovered that the South Alternative and its route options all crossed one or more areas that may have heavy metal and selenium soil contamination from phosphate mining activities (see Section 2.3). Because of environmental and other concerns about these sites, BPA decided to develop an alternative transmission line route (i.e., the current North Alternative) for consideration and determined that preparation of an EIS for the Project was appropriate.

Throughout this EIS, relevant information from the 2009 Preliminary EA has been incorporated, either in its entirety or by reference as appropriate. The 2009 Preliminary EA is also available on-line at www.bpa.gov/go/HooperSprings, and a printed copy can be obtained by calling BPA's toll-free document request line at 1-800-622-4520.


Hooper Springs Transmission Project
Map 1-1
Hooper Springs
Transmission Project Overview
Date: 12/17/2012
Coordinate System: NAD 1983 State Plane
Idaho East (feet)
Projection: Transverse Mercator
Datum: North American 1983
0 1 2 4 6 8 10 Miles
N
S
E
W
Substation
Mile Markers - North Alternative
North Alternative
North Highland Option
Long Valley Road Option
Mile Markers - South Alternative
South Alternative
Option 1
Option 2
Option 3
Option 4
Land Ownership
Caribou-Targhee National Forest
Bureau of Land Management
Bureau of Indian Affairs
US Fish and Wildlife Service
Tribal Land
State Land
Private Land
City
Local Road
State Route
US Highway
Existing Transmission Lines
46- 69kV
138kV - 287 kV
>315kV
Bingham County
Bonneville County
Caribou County
Lincoln County
Idaho
Wyoming
Fort Hall Indian Reservation
Grays Lake NWR
Gray
Wayan
Freedom
Etna
Thayne
Bedford
Auburn
Grover
Afton
Fairview
Henry
Chesterfield
Hatch
Bancroft
Conda
Soda Springs
Blackfoot Reservoir
Caribou-Targhee National Forest
Lanes Creek Substation (BPA and LVE)
North Highland Option
North Alternative
Long Valley Road Option
Connection Facility (BPA)
Blackfoot River Narrows
South Alternative
Option 1
Option 2
Option 3
Option 4
Hooper Springs Substation (BPA)
Threemile Knoll Substation
Blackfoot River Rd
Blackfoot River
Little Blackfoot River
Meadow Creek
Gravel Creek
34
30
89
236
237
238
239
241

1.2 Need for Action

BPA needs to address the current voltage stability and reliability concerns related to the southern portion of LVE's transmission system. The proposed Hooper Springs Transmission Project would provide increased reliability to the southern portion of LVE's transmission system by allowing BPA to provide transmission reinforcement to avoid loss of LVE's entire voltage load during peak winter conditions. The Project would enhance the existing system in the southern Idaho region and would prevent violation of NERC reliability standards.

BPA also needs to address ongoing electricity use (load) growth in southeast Idaho and the Jackson Hole valley area in northwestern Wyoming. Electricity use in these areas has been growing at a rate of about 3 percent per year. As discussed above (Section 1.1), BPA recently upgraded and improved several of its existing transmission lines in southeast Idaho. In addition to strengthening aging equipment, these improvements help meet the growing electricity need in these areas by providing additional transmission capacity. However, additional action is needed to ensure that the transmission system can adequately handle all expected load growth in the area.

1.3 Purposes

In meeting the need for action, BPA will attempt to achieve the following purposes:

- Maintain reliability of BPA's transmission system at BPA and industry standards.
- Meet BPA's contractual and statutory obligations.
- Minimize project costs.
- Minimize impacts to the human environment.

1.4 Lead and Cooperating Agencies

As the project proponent, BPA is the lead agency responsible for preparing this EIS under NEPA. BPA will use this EIS to assist in its decision concerning whether or not to build the proposed transmission lines, substation, and ancillary facilities. If the decision is to build the Project, BPA also would use the EIS to help select the route for the transmission lines from among the alternatives and routing options under consideration, and to assist in determining the exact locations of transmission structures and access roads.

The Council on Environmental Quality (CEQ) regulations implementing NEPA allow for the designation of other federal, state, and local agencies and Native American Tribes as cooperating agencies for an EIS where appropriate. At this time, the U.S. Forest Service (USFS), the U.S. Bureau of Land Management (BLM) and the Idaho Office of Energy Resources have been identified as cooperating agencies to assist with preparation of this EIS.

The USFS manages the Caribou-Targhee National Forest (C-TNF), portions of which would be crossed by the proposed transmission line regardless of route. The USFS will help provide information concerning environmental resources for these portions, and will help ensure that this

EIS is sufficient for supporting USFS decisions related to issuance of rights-of-way (ROWs) for the line and associated access roads. More specifically, the USFS, through the C-TNF, will use the information contained in this EIS, its current Forest Plan, associated planning requirements, and comments from the public to make the following decisions:

- Whether to grant BPA a special use permit across forest lands to construct the transmission line and associated access roads, and allow for maintenance of the transmission line and roads, as necessary.
- If the C-TNF decides to grant BPA the special use permit, it must amend its current Forest Plan in order to adjust the management prescriptions associated with the lands crossed by the Project (See Appendix A, Caribou National Forest [CNF] Revised Forest Plan Amendment).

The BLM also manages lands potentially crossed by the proposed transmission line regardless of route. Similar to the C-TNF, the BLM will help provide information concerning environmental resources and will help ensure that this EIS is sufficient for supporting BLM decisions related to issuance of ROWs for the line and associated access roads. More specifically, the BLM will use the information contained in this EIS, its current Resource Management Plan (RMP) and comments from the public to decide whether to grant BPA a ROW easement across BLM lands to construct the transmission line and associated access roads, and allow for maintenance of the transmission line and roads, as necessary.

The Idaho Office of Energy Resources is the state agency that is responsible for coordinating state review of proposed energy and transmission projects in the state of Idaho; it will help identify state interests that should be addressed in the EIS and help coordinate the review of the EIS by various state agencies.

As BPA proceeds through the NEPA process, BPA also will coordinate with other agencies that may have a role in the Project. For example, the route for the North Alternative would cross lands managed by the Bureau of Indian Affairs (BIA) for the BIA Fort Hall Irrigation Project. In addition, because the Project has the potential to affect wetland resources and would cross several rivers, a permit may be required from the U.S. Army Corps of Engineers (USACE), which has permitting jurisdiction over waters of the United States under Section 404 of the Clean Water Act.

1.5 Public Involvement

1.5.1 EA Scoping Outreach

BPA initiated public involvement in May 2006, when it sent a letter concerning the Hooper Springs Transmission Project, as described in the 2009 Preliminary EA, to adjacent landowners; Tribes; federal, state, regional, and local agencies; interest groups; and others. This letter provided notice of the Hooper Springs Transmission Project and BPA's intent at that time to prepare an EA, and invited public comment on the Project and issues to be addressed in the EA. BPA also held public scoping meetings for the EA in 2006 and 2007, and conducted other public outreach efforts during that time. The public involvement that was conducted as part of the EA process and the issues that were raised at that time are summarized in more detail in the 2009 Preliminary EA (BPA 2009).

1.5.2 EIS Scoping Outreach

After BPA decided to prepare this EIS, BPA again solicited comments from the public to help determine what issues should be studied in the EIS. Because these issues help define the scope of the EIS, this process is called "scoping." Public comments were received by mail, via fax, by telephone, through the BPA website, and at a scoping meeting.

During the scoping period for the EIS, BPA requested comments through the following means:

- On June 29, 2010, BPA published a Notice of Intent to prepare an EIS and conduct public meetings for the Hooper Springs Transmission Project in the Federal Register (75 FR 39241). The Notice of Intent initiated a 30-day public scoping period.
- On June 30, 2010, BPA sent a letter to potentially interested and affected persons, requesting comments and inviting the public to a scoping meeting. The letter was sent to people who live along the proposed transmission line routes; federal, state, regional, and local agencies that may have expertise or require permits for the Project; Tribes with interest in the area; and other interest groups.
- BPA sent a press release to local media, and placed paid ads in local newspapers about the public scoping meeting and the comment period.
- An open-house style public meeting was held in Soda Springs, Idaho on July 29, 2010 to provide information about the Project and the EIS process, and to receive comments on the Project and its potential environmental impacts.
- Additional meetings were held with federal agencies, Tribes, state agencies, and county staffs to provide project information and receive comments.
- BPA established a website with information about the Project and the EIS process: www.bpa.gov/go/HooperSprings. BPA posted a link to all comments it received on the project website.

The July 29, 2010 public scoping meeting featured topic-specific stations and information. BPA staff was available to answer questions and help landowners locate their property on maps in relation to the alternative routes. BPA staff recorded verbal public comments in notes and on flip charts, and members of the public had an opportunity to provide written comments on comment forms.

In addition, throughout the EIS preparation process, the BPA project manager, environmental project lead, and other staff have continued to hold meetings and maintain contact with local governments, state agencies, representatives of Tribes with interests in the area, BLM, BIA, the U.S. Fish and Wildlife Service (USFWS) and other agencies and interested parties.

1.5.3 EIS Scoping Comment Summary

BPA received seven written comments during the EIS scoping period. Verbal comments were also submitted by multiple individuals and organizations during the July 29, 2010 public scoping meeting. People expressed opinions about a wide range of issues for BPA to consider. Issues and concerns identified included the following:

- Overall need of the Project.
- Project cost efficiency to reduce electricity user rates.
- Ground and surface water quality, stormwater generation, and public drinking water impacts.
- Soil compaction, erosion, and changes in runoff patterns.
- Habitat fragmentation and wildlife disturbance, including migratory birds, bald and golden eagles, and Endangered Species Act (ESA) listed species.
- Wildlife impacts associated with blasting.
- Forest and sensitive plant impacts due to clearing.
- Introduction of noxious weeds and invasive plants.
- Vegetation management measures and herbicide use.
- Wetlands and floodplain clearing and fill.
- Historic resources, including historic structures and National Historic Trails.
- Visual impacts on private property, public lands, and key viewing areas, such as scenic highways, the Blackfoot Reservoir, and National Historic Trails.
- Potential decreases in property value.
- Potential disproportionate effects on minority and low-income populations (environmental justice).
- Disturbance to hunting and other recreational activities.
- Farming and other land use disruptions.
- Crossing of federal lands withdrawn for the Fort Hall Irrigation Project.
- Disruption of future mining leases and expansions.
- Availability of transmission lines to support future mine development.
- Private landowner liability for BPA facilities placed on their property.
- Alteration of lands enrolled in the Conservation Reserve Program (CRP).
- Compliance with land use and zoning plans.
- Crossing of lands undergoing Superfund site investigation for selenium soil contamination and associated liability issues.
- Mobilization and/or release of contaminants or toxic substances due to soil and sediment disturbance.

- Degradation of air quality and the generations of greenhouse gas (GHG) emissions that contribute to climate change.

This is a partial list of issues identified from the comments received. All comments received were logged and forwarded to resource specialists to include in their environmental impact analyses for the EIS. All written comments submitted and other project information are posted at: http://www.bpa.gov/comment.

1.6 How this EIS is Organized

In addition to this chapter, this EIS contains the following chapters:

- Chapter 2: Proposed Project and Alternatives provides a description and comparison of the alternatives.
- Chapter 3: Affected Environment, Environmental Consequences, and Mitigation Measures describes the affected environment, environmental consequences of the North Alternative, South Alternative and No Action Alternative, and proposed mitigation measures to lessen or avoid impacts.
- Chapter 4: Consultation, Review, and Permit Requirements discusses the laws, regulations, and consultation requirements applicable to the Project.
- Chapter 5: References provides the references cited throughout the document.
- Chapter 6: Agencies, Organizations, and Person Receiving the EIS list those that have been provided copies of the EIS.
- Chapter 7: List of Preparers identifies and describes personnel that contributed to drafting the EIS.
- Chapter 8: Glossary and Acronyms defines specific terms and abbreviations used throughout the EIS.

This EIS also includes a summary, index, and several appendices.

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2 Proposed Project and Alternatives

This chapter provides a summary of how transmission lines are sited and describes the North Alternative, South Alternative, and the No Action Alternative. Map 2-1 provides an overview of the project area and shows the location of the North and South alternatives. This chapter also discusses the alternatives that were considered but eliminated from detailed study and provides a summary comparison of the North Alternative, South Alternative, and the No Action Alternative.

2.1 Transmission Line Siting

When a potential new transmission line has been identified, BPA's transmission system planners and engineers are usually the first to begin the process of developing potential routes for the new line. First, transmission system planners determine the size or voltage needed and the beginning and end points for the new transmission line. Engineers then determine the type of structures required and the amount of ROW needed for safety clearances. In general, a 100-foot-wide ROW is typically required for single circuit 115-kV transmission lines; a 120-foot-wide ROW is typically required for double circuit 115-kV transmission lines; and a 150-foot-wide ROW is necessary for 138-kV transmission lines. Each potential location for individual structures must also be accessible for construction and maintenance, so road access is required.

With the technical requirements outlined, BPA considers a wide variety of factors as it looks for ways to site the new transmission facilities. Some of these factors include:

- Ensuring the electrical feasibility of the new facilities, with an eye toward maximizing transmission system performance.
- Assessing opportunities for use of existing transmission corridors with vacant ROW or where a new transmission line could parallel an existing or proposed transmission line.
- Considering potential transmission line routings that have at least some existing roads or routes present that could be used to access the new transmission line.
- Seeking to avoid homes, schools, businesses, historic structures, and sensitive cultural resource areas.
- Attempting to route as much as possible over more compatible land uses, such as industrial and agricultural lands, while minimizing impacts on residential land, parks, and any special districts or areas of local or regional interest.
- Generally seeking to follow fence lines and span agricultural fields, orchards, or vineyards, where possible.
- Avoiding certain land uses that can pose compatibility issues such as gravel pits, mine leases, and airstrips, as well as land uses with environmental contamination or other issues such as Superfund sites.
- Looking to site transmission structures on gentle terrain if available to avoid the greater difficulty in construction and access and the greater likelihood of erosion or landslides associated with steep slopes.

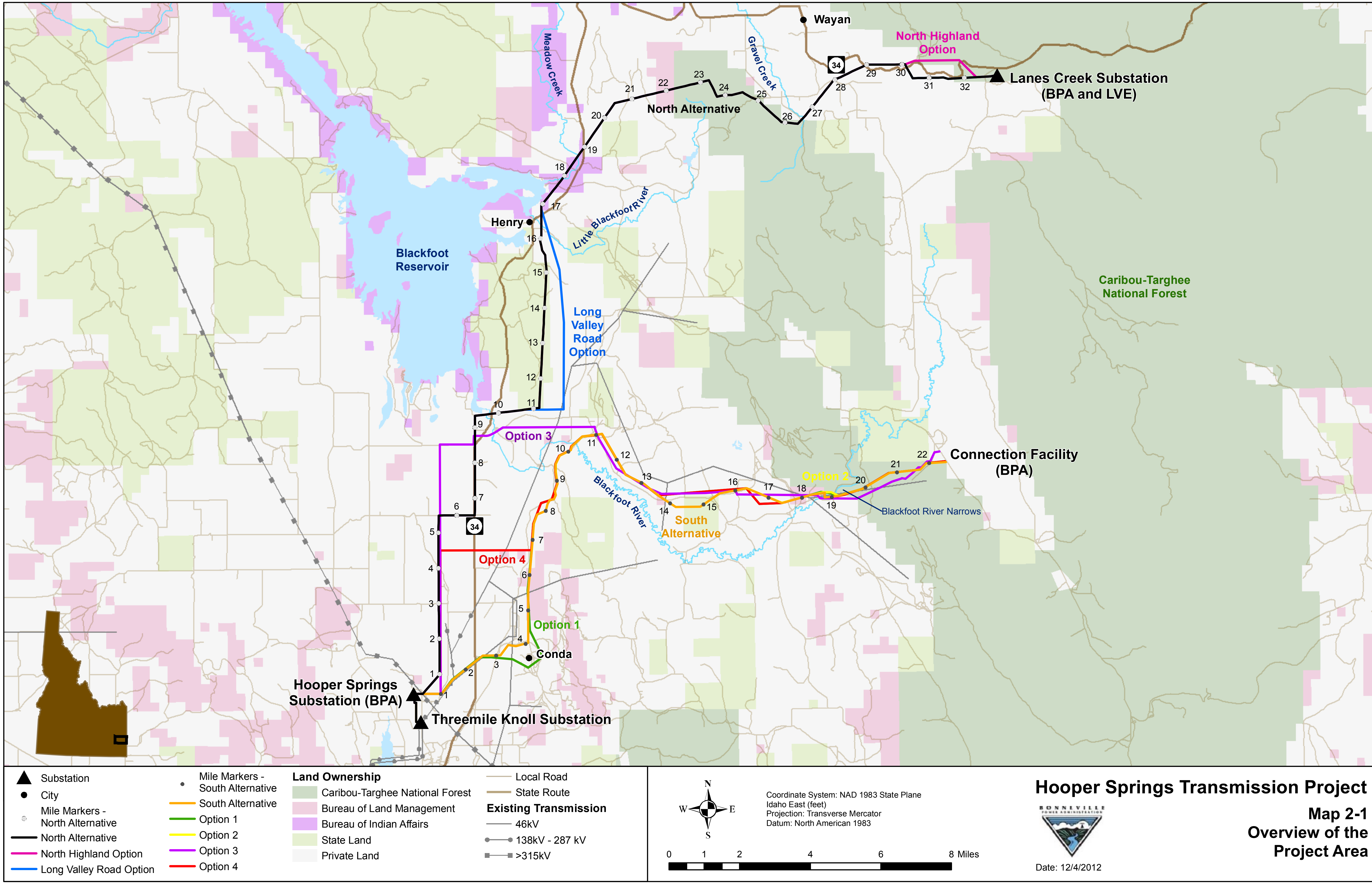
- Seeking to avoid wetlands, nesting sites, habitats of threatened and endangered species, and other sensitive areas wherever possible.
- Attempting to minimize costs by developing a route that is as short and straight as possible and that uses as much less expensive land (such as agricultural or forest lands) as possible, given the consideration of the above factors.

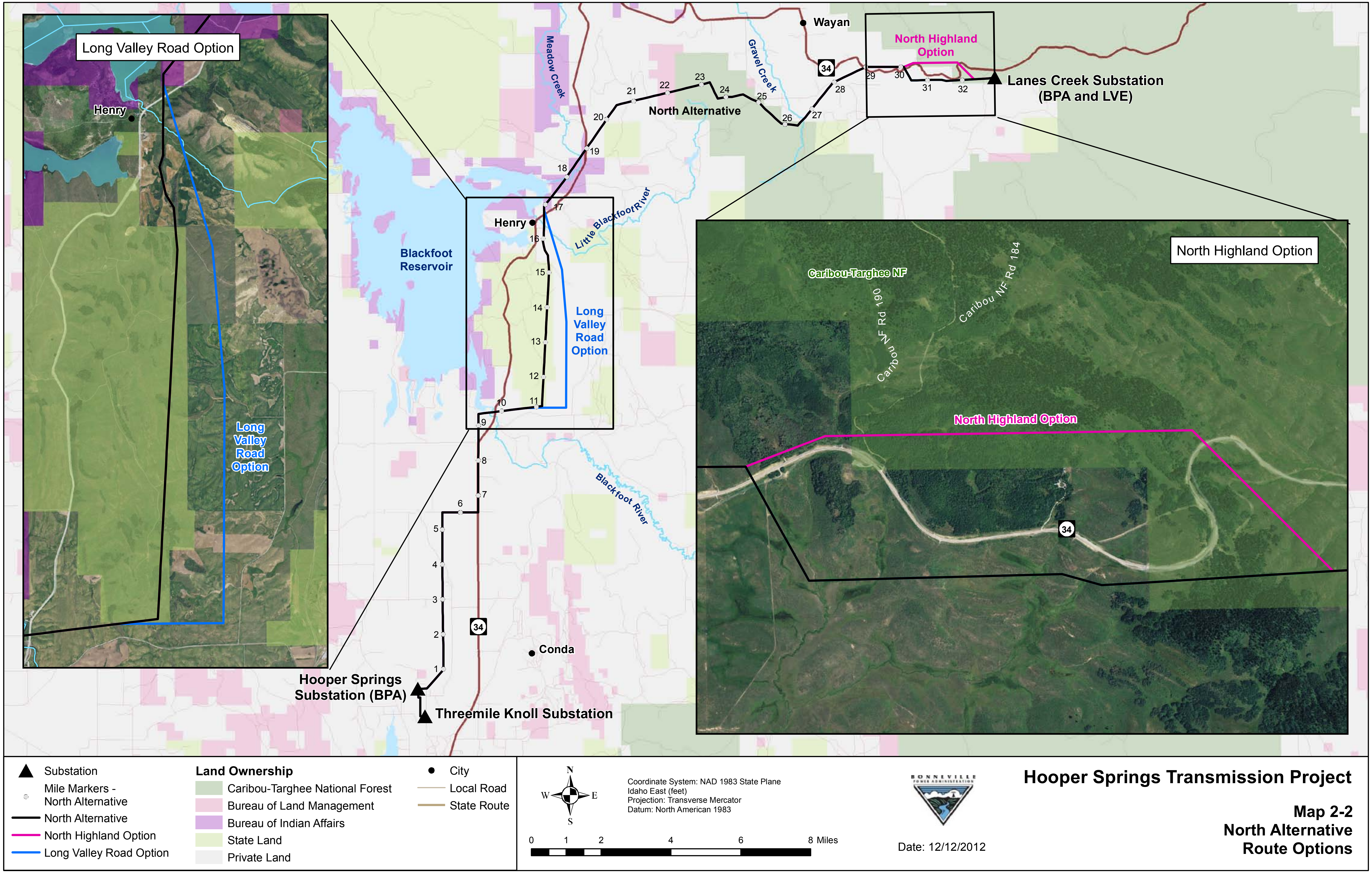
Through the consideration of these factors, BPA develops a proposal for a route for the new transmission line, and, where feasible, identifies potential routing alternatives or options that could be implemented while still meeting the need for the Project. Because BPA's engineers work with BPA's environmental staff in identifying potential environmental and other constraints, the potential routes that are developed typically provide a good start at minimizing or avoiding effects on sensitive environmental resources, as well as minimizing or avoiding conflicts with existing land uses where feasible. These potential routes are then carried through the NEPA and other environmental review processes for further consideration.

2.2 North Alternative

The North Alternative would consist of the following facilities (see Map 2-2):

- A new, approximately 32-mile-long, single-circuit 115-kV transmission line in Caribou County, Idaho that would extend from the proposed BPA Hooper Springs Substation generally north and then east to the existing LVE Lanes Creek Substation.
- A new 138/115-kV BPA Hooper Springs Substation, which would be located about 3 miles directly north of the city of Soda Springs, Idaho, along Threemile Knoll Road in Caribou County, Idaho, and would occupy approximately 6.8 acres.
- New 115-kV substation facilities within the boundaries of LVE's existing Lanes Creek Substation, which is located east of the unincorporated community of Wayan, Idaho.
- A new 0.5-mile, single-circuit 138-kV transmission line that would extend from the proposed Hooper Springs Substation generally south to PacifiCorp's existing 345/138-kV Threemile Knoll Substation (required to connect the new line to the regional transmission grid).
- Improvements and upgrades to approximately 8.1 miles of existing access roads along the transmission line ROWs, along with associated spur roads within the ROWs; and construction of approximately 23.7 miles of new permanent access roads along the transmission line ROWs, along with associated spur roads within the ROWs.


Wayan
North Highland Option
Lanes Creek Substation (BPA and LVE)
North Alternative
Meadow Creek
Gravel Creek
Henry
Blackfoot Reservoir
Little Blackfoot River
Long Valley Road Option
Caribou-Targhee National Forest
Option 3
Connection Facility (BPA)
Option 2
Blackfoot River
Blackfoot River Narrows
South Alternative
Option 4
Option 1
Conda
Hooper Springs Substation (BPA)
Threemile Knoll Substation
34
Substation
City
Mile Markers - North Alternative
North Alternative
North Highland Option
Long Valley Road Option
Mile Markers - South Alternative
South Alternative
Option 1
Option 2
Option 3
Option 4
Land Ownership
Caribou-Targhee National Forest
Bureau of Land Management
Bureau of Indian Affairs
State Land
Private Land
Local Road
State Route
Existing Transmission
46kV
138kV - 287 kV
>315kV
N
S
E
W
Coordinate System: NAD 1983 State Plane Idaho East (feet)
Projection: Transverse Mercator
Datum: North American 1983
0 1 2 4 6 8 Miles
Hooper Springs Transmission Project
Map 2-1
Overview of the Project Area
Date: 12/4/2012



Long Valley Road Option
Henry
Long Valley Road Option
Meadow Creek
Gravel Creek
Wayan
North Highland Option
Lanes Creek Substation (BPA and LVE)
North Alternative
Blackfoot Reservoir
Little Blackfoot River
Long Valley Road Option
Blackfoot River
Conda
Hooper Springs Substation (BPA)
Threemile Knoll Substation
North Highland Option
Caribou-Targhee NF
Caribou NF Rd 190
Caribou NF Rd 184
North Highland Option
Substation
Mile Markers - North Alternative
North Alternative
North Highland Option
Long Valley Road Option
Land Ownership
Caribou-Targhee National Forest
Bureau of Land Management
Bureau of Indian Affairs
State Land
Private Land
City
Local Road
State Route
Coordinate System: NAD 1983 State Plane Idaho East (feet)
Projection: Transverse Mercator
Datum: North American 1983
0 1 2 4 6 8 Miles
Date: 12/12/2012
Hooper Springs Transmission Project
Map 2-2
North Alternative Route Options

The following describes the various components of the North Alternative in more detail.

2.2.1 Easements and Land

The corridor for the North Alternative is composed of private property and lands under federal and state ownership. Construction of the North Alternative would require easements for single-circuit transmission line ROWs and access roads. In general, BPA would need a 100-foot-wide ROW for the new single-circuit 115-kV transmission line, a 150-foot-wide ROW for the new 138-kV line, and a 50-foot-wide easement for access roads. The width needed (100 and 150 feet) for the transmission line ROW is intended to ensure that the transmission line is a safe distance from other objects and structures, such as trees and buildings.

Where transmission line facilities and access roads would be located on privately-owned land, BPA would purchase easements from the underlying private landowner. Similarly, BPA would purchase easements for facilities located on state of Idaho lands. Most easements for the transmission lines would give BPA the rights to construct, operate, and maintain the lines in perpetuity. On C-TNF, BLM, and BIA-managed land, BPA would apply to those federal agencies to secure the necessary special use permits or easements. Although the underlying landowner would still own and use the property, BPA would not permit any uses of the transmission line ROWs that are unsafe or might interfere with constructing, operating, or maintaining the transmission facilities. These restrictions would be part of the legal rights that BPA would acquire for the transmission lines.

Construction of the North Alternative also would require the purchase of land for the proposed Hooper Springs Substation. Through this purchase, BPA would own approximately 6.8 acres of the property in fee (absolute) title.

At LVE's existing Lanes Creek Substation, BPA would obtain a special use permit from the C-TNF and enter into a cooperating agreement with LVE for the use of a portion of its existing substation land. Substation construction within the boundaries of the existing Lanes Creek Substation would not require additional lands outside of the existing fenced area.

2.2.2 Transmission Lines

As described above, the North Alternative would involve construction of both a single-circuit 115-kV transmission line between the proposed BPA Hooper Springs Substation and LVE's existing Lanes Creek Substation, and a 138-kV transmission line between the proposed Hooper Springs Substation and PacifiCorp's existing Threemile Knoll Substation. This section describes the elements of each of these transmission lines. Although many aspects of these two transmission lines would be similar, some aspects would differ as discussed below.

Transmission Line Routing

Map 2-2 shows the route for the North Alternative. From the proposed Hooper Springs Substation, this line would head generally northeast for about 1 mile and then turn due north for approximately 5 miles west of Three Mile Road to China Hat Road. Parallel to China Hat Road, the route would travel east about 1 mile, cross Idaho State Highway 34 (Highway 34), and then turn north. The line would continue for about another 10 miles generally north-northeast to a point near the unincorporated community of Henry, Idaho along the eastern side of the Blackfoot Reservoir, making two 90-degree turns along the way. From Henry, the line would cross Highway 34 and turn in a more northeasterly direction and continue for approximately 8 miles to a point about 1 mile west of the unincorporated community of Wayan, Idaho. From that point, the line would continue generally east for about 8 miles crossing Highway 34 twice more before reaching LVE's existing Lanes Creek Substation.

Map 2-2 also shows the proposed location of the 138-kV transmission line. This proposed line would generally follow a straight alignment from the proposed Hooper Springs Substation to PacifiCorp's existing Threemile Knoll Substation for its entire 0.5-mile length.

Routing Options

Two, relatively short routing options have been identified as part of the North Alternative. The first routing option for a segment of the 115-kV transmission line has been identified north of Soda Springs and south of Henry, Idaho. This routing option is referred to as the Long Valley Road Option because it generally parallels Long Valley Road. The southern end of this routing option begins at the North Alternative corridor transmission line mile (line mile) 11 and the northern end, where the option rejoins the proposed transmission line route, is located at line mile 17 (see Map 2-2). This routing option traverses private agricultural and grazing lands, and would be located east of lands owned and managed by the state of Idaho. This option would increase the length of the transmission line by approximately 0.6 mile.

A second routing option has been identified for a segment of the transmission line that traverses private land and C-TNF lands at the northeastern extent of the North Alternative corridor. This routing option is referred to as the North Highland Option because it travels north of Highway 34. The North Highland Option would move the North Alternative corridor approximately 0.5 mile to the north between line miles 31 and 33. This option is about 2.2 miles long and is the same length as the portion of line replaced on the North Alternative (Map 2-2).

Transmission Structures

The North Alternative would require approximately 223 new structures over its 32-mile length. Approximately 10.8 miles would be constructed using approximately 73 steel single-pole structures between Hooper Springs Substation and line mile 11 (see Map 2-2). Steel single-pole structures would also be used in certain agricultural areas to minimize impacts on crop cultivation activities, as single-pole structures have a smaller footprint than H-frame structures. Approximately 150 wood, H-frame structures would be installed over the remaining approximately 21.2 miles between line mile 11 and the Lanes Creek Substation (see Map 2-2). The proposed 138-kV transmission line would require 5 structures over its approximately 0.5-mile length. These structures would all be wood, H-frame structures.

The Long Valley Road Option would require the use of 7 additional structures, compared to the alignment described above. Approximately 44 steel single-pole structures would be used instead of 37 wooden H-frame structures. All of the North Highland Option would be composed of wood, H-frame structures and would require about the same number of wood-pole structures as compared to the North Alternative portion of line described above.

A flat, graveled area would be constructed at each steel pole structure (except in flat areas) along the North Alternative corridor. The area would be about 40 feet wide by 80 feet long (0.07 acre) and would provide a pad for a crane to sit on during assembly of the steel pole structures. Most of these pads would be left in place depending on the type of land use present.

To assemble and erect the suspension steel single-pole and wood H-frame structures for both lines, an area about 100 feet by 50 feet (0.1 acre) would be temporarily disturbed at each site for construction equipment maneuvering and structure assembly. At dead end and angle structures, a work area of approximately 100 feet by 100 feet (0.2 acre) would be required. The disturbed areas would be restored to their original contours and revegetated. Structure heights at particular locations would depend on terrain, the length of the span, and other factors.

Wood Structures

The wood, 115-kV H-frame structures for the North Alternative would be approximately 20 inches in diameter at the base and 55 to 105 feet tall (typical height would be 70 feet tall). Figure 2-1 depicts the proposed structures. The 138-kV wood structures would be similar with the exception that they would be generally 10 feet taller (typical height would be approximately 80 feet tall). Individual poles for each H-frame structure would be spaced about 12 feet apart. Structures would be generally spaced about 800 feet apart (i.e., a distance of about 800 feet between structures).

BPA would use three types of H-frame structures for the North Alternative: suspension structures, angle suspension structures, and dead-end structures. These structures, depicted in Figure 2-1, may be made up of two or three wood poles depending on their purpose. Most of the proposed H-frame structures would be two-pole suspension structures that would be used on relatively straight stretches of line or where turning angles between structures are generally less than 15 degrees. Only two poles would be used because the structures would not have to withstand the stresses created by angles in the conductor. Angle suspension structures would be used on smaller angles and would look like suspension structures.

Three-pole angle structures would be located at points where the line changes direction, generally at angles of 15 degrees or greater. Three-pole dead-end structures would be used where the line makes a sharp turn or when the conductor tension changes. Dead-end structures are much stronger than suspension structures to hold the tension of the conductors.

Dead-end structures would be placed at intervals along the transmission line to independently carry the weight and tension of the conductors. Dead-end structures could also be used on very long spans, such as river crossings.

Some structures, such as dead-end or angle structures may require guy wires that provide stability to structures subject to stress. Guy wires would be attached at various points along the structure and anchored into the ground with anchor plates. The guy wire disturbance area would be included in the structure work area. Guy wires would generally be within the North Alternative ROW, and no further than 50 feet from the ROW center line.

Figure 2-1. Proposed Wood Pole and Steel Structures

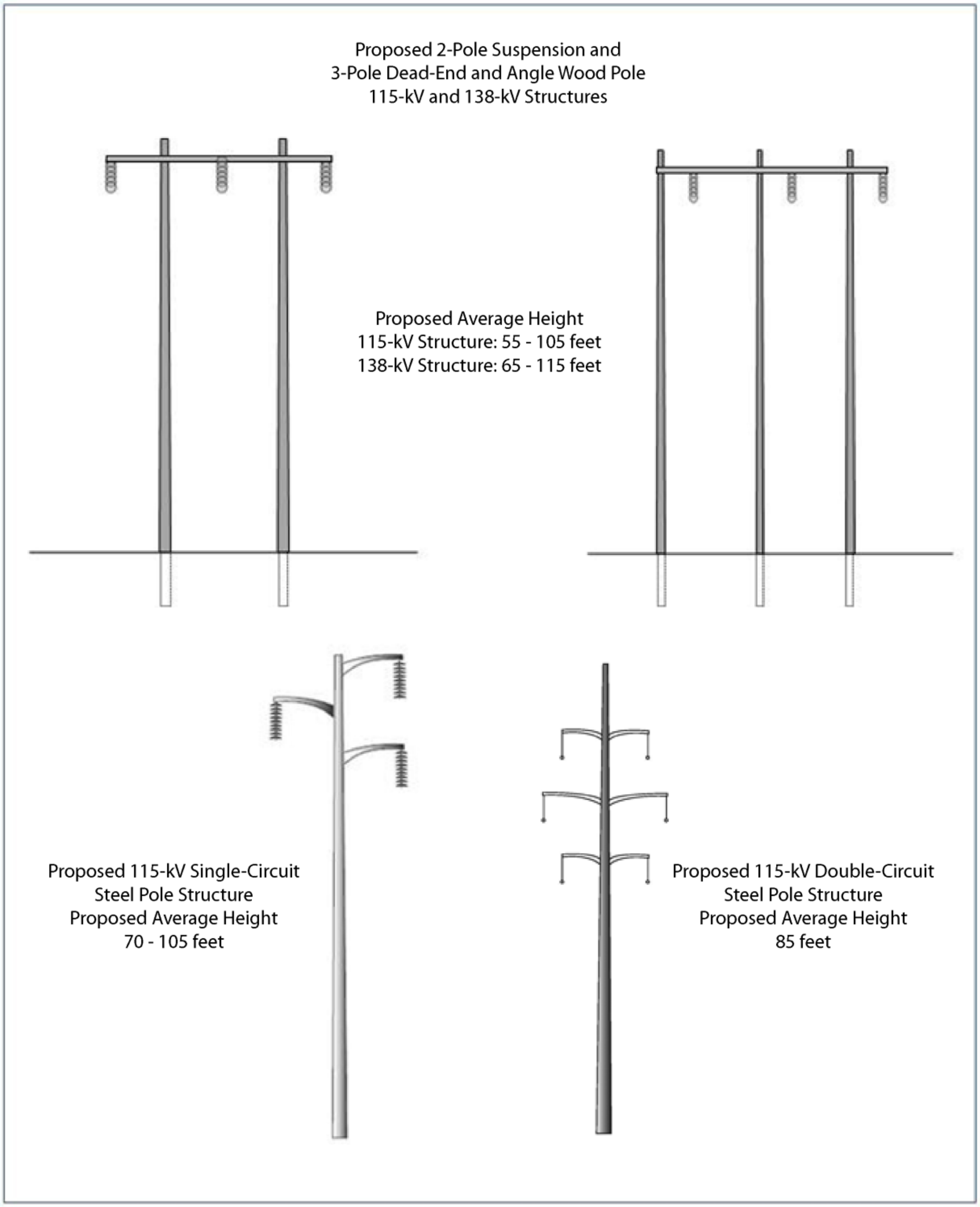


Figure 2-1. Proposed Wood Pole and Steel Structures
BPA Hooper Springs Transmission Project

Steel Pole Structures

The steel poles for the North Alternative would be about 3 to 4 feet in diameter at the base and range from 70 to 105 feet tall, with an average height of 100 feet. Steel poles consist of multiple hollow sections of various lengths that are connected and embedded in the ground. Dead end steel pole structures would require a concrete footing that would be approximately 6 feet in diameter and 30 feet deep. Guy wires would not be required on steel pole structures.

Structure Footings

All wood structures and most steel structures for the North Alternative would be directly embedded into the ground. A drill rig would be used to auger the holes for the poles in areas of minimal rock. The average hole depth would be approximately 10 feet for wood pole structures and 15 feet for steel pole structures. Backfill for the structures would typically be brought from offsite, though in limited access areas, soil and rock removed during excavation may be used to backfill after the structures are installed. Some steel structures, such as dead ends, would have a concrete pier for the footing and may be excavated to a depth greater than 15 feet.

Conductors

The wires that carry the electrical current on transmission lines are called conductors. For alternating-current transmission line circuits, a three-phase system is used, with each phase requiring a conductor. Accordingly, three conductors make up one circuit; each single-circuit structure for the line would thus hold three conductors. The conductors are not covered with insulating material as are those on, for example, electrical appliances, but are physically separated from one another on the transmission structure. Air serves as the insulating material.

Conductors are attached to the structures using insulators. Insulators are bell-shaped devices that prevent electricity from jumping from the conductors to the structure and going to the ground. The North Alternative would use non-reflective ceramic insulators.

The conductor would need to be fitted together where one reel of conductor ends and a new reel begins. Conductor fittings would be made using hydraulic compression where a press is used to compress the fittings on the conductor. Conductors would need to be fitted once about every 1.5 to 2 miles. See Pulling and Tensioning Sites, for a description of the area needed to pull and tighten conductors.

For safety reasons, BPA has established minimum conductor heights above ground and other obstacles that meet or exceed National Electrical Safety Code (NESC) clearance requirements.

Overhead Ground Wires and Counterpoise

One to two small wires (0.5-inch diameter), called overhead ground wires, would be attached to the top of the structures for the North Alternative. Steel pole structures would have one overhead ground wire, while wood pole structures would have two. The ground wires are strung from the top of one structure to the next. Ground wires are used for lightning protection. If lightning strikes, the overhead ground wire takes the charge instead of the conductors.

To take the lightning charge from the overhead ground wires and dissipate it into the earth, a series of wires called counterpoise would be buried in the ground at the base of the steel and wood pole structures and within the North Alternative transmission line ROW. Counterpoise could be needed at every structure, depending on the soil types present. Up to four counterpoise wires could be buried up to 100 feet from the structure. The wires would be buried at a distance and depth designed to meet BPA soil resistivity standards. The wire is usually buried 12 to 18 inches deep, except in cultivated areas where it could be buried about 30 inches deep or to an even greater depth if a farmer uses deeper plowing methods. Typically, counterpoise wires would run down the center line of the ROW from each side of the structure. Two other wires would run at 90-degree angles away from each side of the structure and would be located within the ROW at a distance of approximately 40 feet off centerline. For wood pole structures, two ground rods would be driven into the ground between 1.5 and 6 feet from each of the outside poles. Where there are obstructions, buried utilities, or environmentally sensitive areas, the counterpoise design would be changed to avoid these areas.

During construction, the counterpoise could be buried several ways. Installers could use backhoes, trenchers, vibrating plows, or occasionally hand digging depending on the depth, soils, terrain, and size of buried rock. With a backhoe, the trench would be 12 or more inches wide. Removed soil and rocks would be piled to the side and placed back in the trench to cover the counterpoise. If a trencher is used, the trencher would open up a 4 to 6 inch trench and lift up the soil to the side. The soil would be pushed back into the trench after the counterpoise is installed. Large tractors would use a vibrating plow to force a blade into the ground. The counterpoise would then run through a hole in the blade and trail out behind the blade at a specified depth. For the purpose of this analysis, it is assumed that the trench associated with installation would be approximately 24 inches wide and 3 feet deep.

Pulling and Tensioning Sites

Pulling and tensioning sites are areas used for pulling and tightening the conductors to the correct tension once they are mounted on the transmission structures. As is typical for transmission lines, pulling and tensioning sites for the North Alternative would be needed about every 2 to 3 miles along the transmission line route. About 14 pulling and tensioning sites would be required for construction of the North Alternative and two sites would be required for the 138-kV line. Pulling sites would be within, or next to, the North Alternative ROW. These sites would include a flat area to place a large flatbed trailer that holds the reels of conductor or a tensioning machine. An area about 100 feet wide by 300 feet long, or about 0.75 acre, would be disturbed at each pulling and tensioning site.

Pulling and tensioning of the proposed lines also may require “snubs,” which are trenches about 8 feet deep by 4 feet wide by 12 feet long. These snubs would be located in the ROW. After the conductor is pulled through the structures and before it is strung under tension, it is tied off on poles buried in the snub. These trenches would be backfilled and restored following construction.

The appropriate locations for pulling sites and snubs are determined by the construction contractor using environmental and land use information provided by BPA. If the pulling sites are identified outside of the North Alternative ROW, additional surveys for cultural resources and/or flora and fauna could be required for those sites.

Staging Areas

Two temporary staging areas would be needed along or near the proposed transmission line for construction crews to store materials, equipment and vehicles for both the 115-kV and 138-kV lines. It is anticipated that approximately 10 acres of land would be required at each site for staging areas. The contractors hired to construct the transmission line would be responsible for determining appropriate staging area locations. Often contractors rent empty parking lots or already developed sites for this purpose. If necessary, environmental review of staging areas would be conducted prior to approval for use if necessary.

2.2.3 Substation Facilities

Substations are an important part of the electric transmission system that interconnect transmission lines, transform (i.e., change) voltages to higher or lower levels, regulate voltage, and disconnect lines for maintenance, fault, or outage conditions.

The proposed Hooper Springs Substation would be located at the southwestern end of the North Alternative corridor. This substation would be used primarily to transform voltages between the proposed 138-kV transmission line that would extend from PacifiCorp's existing Threemile Knoll Substation (a 345/138-kV substation) to the Hooper Springs Substation, and the proposed 115-kV transmission line that would extend from the Hooper Springs Substation to LVE's existing 115-kV Lanes Creek Substation. Accordingly, the Hooper Springs Substation would be constructed as a 138/115-kV substation. The Hooper Springs Substation would be located relatively close (about 0.5 mile) to the Threemile Knoll Substation, and would occupy approximately 6.8 acres. Figure 2-2 depicts existing conditions in the general vicinity of the proposed site for the Hooper Springs Substation.

The proposed substation facilities that would be constructed at LVE's existing Lanes Creek Substation would be located at the northeastern end of the North Alternative area. These facilities would provide an interconnection at the Lanes Creek Substation of the proposed 115-kV transmission line with LVE's existing transmission system. These facilities would all be located within the existing fenced boundary of the Lanes Creek Substation. Figure 2-3 depicts existing conditions at the Lanes Creek Substation.

Figure 2-2. Area of the Proposed Hooper Springs Substation

Figure 2-3. Existing Lanes Creek Substation

The proposed Hooper Springs Substation would contain electrical and other equipment typical of a utility substation, including the following:

- **Transformer**—a device for transferring electrical energy from one circuit to another by magnetic induction, usually between circuits of different voltages. It consists of a magnetic core on which there are two or more windings.
- **Power circuit breakers**—a switching device that can automatically interrupt power flow on a transmission line at the time of a fault, such as a lightning strike, tree limb falling on the line, or other unusual event. The breakers would be installed at the substation to redirect power as needed. Several types of breakers have been used in BPA substations.
- **Switches**—devices used to mechanically disconnect or isolate equipment. Switches are normally located on both sides of circuit breakers.
- **Bus tubing and pedestals**—Ridged aluminum pipes that the power flows on within the substation.
- **Control house and conduit**—typically a one-story building with communication equipment and switches necessary to turn equipment on and off. Some control houses are plumbed for bathroom facilities and have a work space for personnel. Underground conduit throughout the substation connects the yard equipment to the control house. Electrical service for the control house and conduit would be from the new transmission lines.
- **Substation dead-end structures**—structures within the substation where incoming or outgoing transmission lines end or begin. Substation dead-ends are typically the tallest structure within the substation.
- **Grounding mat**—a wire mesh mat laid about 18 inches below ground throughout the substation, extending outside the fence perimeter. Equipment is connected to the mat for grounding, for the protection and safety of both equipment and personnel.
- **Substation rock surfacing**—a 3-inch-thick layer of rock, selected for its insulating properties, placed on the ground within the substation to protect operation and maintenance personnel from danger during substation electrical failures.
- **Substation fence**—a chain-link fence with barbed wire on top surrounding the substation for security and public safety.
- **Stormwater retention system**—stormwater management involves careful measures to prevent sediment and other pollutants from entering surface or groundwater, treatment of runoff to reduce pollutants, and flow controls to reduce the impact of altered hydrology.

The Lanes Creek Substation would contain much of this same equipment, but would be different since it would be constructed within an already-established substation site and also would not require voltage transformer equipment. The main equipment that would be installed at the Lanes Creek Substation would include breakers, disconnect switches, dead end structures, and a control house. Electrical service for the new control house is already present at Lanes Creek Substation.

Both the Hooper Springs and Lanes Creek substations would be unmanned. The substations would be automated and could be controlled remotely. The substation operator would visit the substations as needed weekly or monthly. Maintenance crews would perform maintenance on equipment as necessary.

2.2.4 Access Roads

Access roads are the system of roads that BPA's construction and maintenance crews would use to get to the structures or structure sites along the transmission lines and to the substation. Engineers design roads to be used by cranes, excavators, supply trucks, boom trucks, log trucks, and line trucks. Roads are built within the transmission line ROW as much as possible. Access road approaches would be from public roads. If existing access roads can be used, they would be upgraded as necessary. Some new access roads, both temporary and permanent, would be needed. Spur roads would be needed from the existing access roads to the new structure sites; spur roads would generally be within the ROW. Road turn-arounds would be constructed where access roads end, typically at structure sites. Other turn-arounds may be constructed specifically to minimize disturbance to adjacent sensitive resources.

New and existing access roads for the North Alternative would be graded and/or rocked to provide a 14- to 20-foot-wide travel surface with about a 20- to 30-foot-wide total disturbed area. If tree roots are present in the cleared area, or if drainage and embankment construction work is required, the disturbance area could be greater than 30 feet. Typically, a 50-foot-wide easement would be obtained from the landowner for new access roads.

The North Alternative would require the following access roads:

- Approximately 23.7 miles of new, permanent access road would need to be constructed.
- Approximately 8.1 miles of existing access road would need to be improved and reconstructed.

Improvement and reconstruction would consist of the following activities:

- Widening existing roads.
- Installing or improving culverts, drain dips, and water bars.
- Improving or installing a bridge at Meadow Creek.
- Installing culvert crossings for Gravel Creek and an unnamed tributary to Gravel Creek.
- Clearing and disposal of brush and trees.
- Excavating soil and placing embankments for new roads.
- Placing crushed rock.

Dirt roads in the North Alternative area become slippery and impassible when wet. Gravel would be placed on roads where needed for dust abatement, stability, load bearing, and to keep the roads passable during wet soil conditions. Drain dips or water bars may also be needed on steep slopes or where access roads cross drainages that carry seasonal runoff.

Where new roads cross streams or drainages, culverts would be needed. All culverts installed would allow for appropriate fish passage. Under the North Alternative, the Meadow Creek bridge would be replaced to support construction and maintenanceequipment. The Meadow Creek bridge would also be designed to provide appropriate fish passage.

Temporary roads would be reclaimed according to USFS, BLM, BIA, and other landowner requirements (i.e., erosion control measures installed, regraded, reseeded, etc.) following completion of the North Alternative. For permanent roads, BPA, in coordination with landowners, would install gates at the entrances to access roads to prevent motorized public access. There also would be gates in fences that separate animals or denote property lines. Gate locks would be coordinated with the landowners to ensure both BPA and landowner access.

2.2.5 Vegetation Clearing

When vegetation grows or falls close to a transmission line it can cause an electrical arc that can start a fire, cause an outage of the line, or injure or kill someone. Tall vegetation cannot be allowed to grow within the transmission line ROW. Tall trees that grow outside of the ROW that could fall into the line must also be removed. In deep valleys with sufficient clearance, trees may be left in place. Most of the vegetation along the proposed transmission line ROW is prairie and open areas, both of which are compatible with transmission lines. During construction, low-growing plant communities would be protected as much as practicable and promoted as the basis for ongoing vegetation management following construction. Clearing would take into account line voltage, vegetation species height and growth rates, ground slope, conductor location, span length (which influences conductor swing), stringing requirements, and the clearance distance required between the conductors and other objects.

Clearing at structure sites under the North Alternative may occur at the same time as corridor clearing. Where necessary for construction access, an area adjacent to each proposed structure would be graded to form a level working surface, except in areas where terrain or the presence of sensitive resources does not permit such an activity.

There are portions of the proposed transmission line ROW that would cross through forested areas that BPA would need to clear and maintain with compatible low-growing vegetation species. BPA would need to cut all tall-growing trees and shrubs to prevent vegetation from coming close enough to the conductor to cause an electric arc (see Section 3.4, Vegetation). On either side of the new corridor, danger trees that pose a hazard to construction activities and reliable operation of the transmission line would be removed. Wheeled and tracked logging equipment necessary to clear the ROW and set structures could be needed where slopes exceed 40 percent. On USFS lands, USFS would mark and cruise merchantable timber to be directly sold to the primary contractor in a settlement sale. BPA would coordinate with C-TNF as danger trees are identified to ensure trees are properly designated and sensitive species or habitat are not disturbed. Whole tree yarding is the preferred method for timber removal; however, helicopter yarding may also be used in areas that are inaccessible to ground-based equipment. Slash and non-merchantable timber (cut trunks and branches) from clearing the North Alternative ROW would be cut into smaller pieces and spread in upland areas throughout the ROW.

2.2.6 Construction Sequence

Construction of the proposed Hooper Springs Substation would begin with clearing and grading the site to provide a level work area. A ground mat, conduit for control cables, drainage, concrete footings for all the high voltage equipment, and structures would then be installed. After all the below grade work is completed, the above grade construction work would begin with the erection of the dead-end structures and pedestals to support the electrical bus. Other support structures would be installed for the high voltage equipment. The high voltage equipment would be bolted on the support structures and connected to the electrical bus by a short length of flexible conductor. Control cables would then be attached to the high voltage equipment and routed to the control house. A fence would be installed around the perimeter of the substation to provide for public safety and security. Access to the substation for construction activities would be via an existing road, Threemile Knoll Road. There would be a new 300-foot-long access road from Threemile Knoll Road to the Hooper Spring Substation.

The Lanes Creek Substation would be located inside the existing fenced LVE substation. Construction of the Lanes Creek Substation would require minimum site preparation. Construction of the above grade components would be similar to that described above for the Hooper Springs Substation.

Typically construction of the transmission line begins with clearing the ROW, access roads, pulling and tensioning sites, danger tree areas, installing temporary guard structures, constructing crane pads, and other workspaces. Temporary spur and access roads along the proposed transmission line ROWs and work areas would be constructed. Structure sites would then be cleared and graded, as needed, and erosion control devices would be put in place. Transmission line materials would be stockpiled at the staging sites.

For structure footings, holes would be excavated with an auger. Drilling and blasting could be required in some areas with bedrock. Structure pieces would be brought to each site, constructed, lifted into place using a line truck, crane or helicopter, and set into the excavated holes. Holes would be backfilled with native material from the original excavation, backfill brought from offsite, or concrete.

Before stringing conductor, temporary guard structures would be installed at all road, railroad, and overhead utility crossings to protect the public and prevent the conductor from falling at these sites. Two wood guard structures would be placed in augered holes, one on each side of the road or railroad crossing. A third wood pole would be used as a cross-arm to prevent the conductor from dropping. Typically, one guard structure would be used to prevent the conductor from contacting overhead utility lines that cross under the line.

Next, the conductor would be strung from structure to structure. A sock line (thick rope) would be placed in pulleys atttached to structures via helicopter or by hand and pulled through each structure. A hard line (smaller wire than conductor) would be attached to the end of the sock line and pulled back to where the conductor reel is located. The hard line would be connected to the conductor, which would be pulled through the pulleys to the other end of the pull. Some sites may require the conductor to be secured by snubbing the conductors in the snub trenches. The ground wires would also be strung using a similar method, with pulling sites on the ground to tighten the cable.

After the structures, conductors, and ground wires are installed, the construction contractor would remove construction equipment and debris and restore the disturbed areas. Soils used for agriculture in the temporary disturbance area that become compacted would be restored and reseeded after construction to reestablish close to original conditions. Topsoil would be spread as necessary and disturbed areas would be reseeded with a suitable seed mix. Existing and new permanent access roads would be repaired, as necessary. Temporary roads on USFS land would be reclaimed according to USFS requirements (i.e., erosion control measures installed, land regraded, areas reseeded, etc.) and then blocked to restrict unauthorized travel following completion of project construction. Other temporary access roads would be reclaimed in accordance with landowner requests, BPA standards, or permit requirements.

2.2.7 Construction Schedule and Work Crews

If BPA decides to proceed with the Project after completion of all necessary environmental review, construction of the proposed substation and transmission lines could begin in spring 2014. BPA likely would construct the transmission line over two phases. The first phase would involve the clearing of the ROW, some access road construction, structure footing installation, and substation construction. The second phase would involve the construction of the remaining components of the transmission lines and would occur in 2015. If this occurs, the new substation and transmission lines may be energized as early as fall 2015. This expected schedule would result in a total construction period of about 16 months. However, weather or other factors could delay or prolong the construction schedule.

One or more construction crews would clear vegetation, improve/construct access roads, and construct the lines. A typical construction crew would have the following:

- 10 to 15 construction workers
- 10 vehicles (pickups, vans)
- 4 bucket trucks
- 2 line trucks with cranes
- 1 to 2 large cranes
- 1 reel machine
- 2 large excavators
- 1 line tensioner
- 1 helicopter
- 2 all-terrain vehicles (ATVs)
- 1 water truck

- 3 water buffalo trucks for fire protection

A typical crew can usually construct about 10 miles of transmission line in 2 to 3 months. Actual workforce numbers would vary over time. During peak construction, about 50 workers would be working on the transmission lines at one time.

2.2.8 Maintenance

During the life of the transmission lines, BPA would perform routine and periodic maintenance, and emergency repairs on the transmission lines. Maintenance would typically involve replacing insulators or repairing guy wires, vegetation management, and soil stabilization.

BPA would be responsible for all maintenance of the lines and would conduct maintenance and safety inspections by helicopter twice a year. BPA typically conducts routine inspection patrols of the 15,000 circuit-mile federal transmission system in the Pacific Northwest by helicopter. These patrols are a separate and independent activity from construction of the Project but are discussed here to provide information about this activity.

Patrols are essential to determine where line maintenance is needed and to ensure continued reliability of the transmission system. Helicopter teams look for damaged insulators, damaged support members, washed-out roads, hazardous vegetation, encroachments, and other problems indicating that a repair may be needed.

Aerial inspections typically are followed by annual ground inspections for each transmission line. Maintenance vehicles would use access roads where established, and maintenance workers would walk through agricultural fields when able to avoid damage to crops. If repairs are needed or in emergency situations, vehicles and equipment would need to drive through fields and could cause damage to crops, vegetation, and other property. BPA would compensate landowners for damages.

Vegetation control and soil stabilization are two main components of the maintenance program. Tall-growing vegetation is regularly removed from the corridor and from around structures so as not to interfere with the conductors. Access roads are graded, seeded, ditched, and rocked in order to reduce soil erosion as needed. In an effort to maintain native low growing vegetation, grass is not removed while brush within the road bed and on each side is mowed. Branches from roadside trees that could affect vehicle traffic are also removed.

BPA's vegetation management would be guided by its Transmission System Vegetation Management Program EIS (BPA 2000) and Record of Decision (August 23, 2000). BPA adopted an integrated vegetation management strategy for controlling vegetation along its transmission line ROWs. This strategy involves choosing the appropriate method for controlling the vegetation based on the type of vegetation and its density, the natural resources present at a particular site, landowner requests, regulations, and costs. BPA may use a number of different methods: manual (hand-pulling, clippers, chainsaws), mechanical (roller-choppers, brush-hogs), biological (insects or fungus for attacking noxious weeds), and herbicides.

Noxious weed control is also part of BPA's vegetation maintenance program. BPA works with the county weed boards and landowners on area-wide plans for noxious weed control. Prior to controlling vegetation, BPA would send notices to landowners and request information that might help in determining appropriate methods and mitigation measures (such as herbicide-free buffer zones around springs or wells).

2.2.9 Estimated Cost

Construction cost of the Hooper Springs Substation, additions to Lanes Creek Substation, construction of the proposed 32-mile-long single-circuit115-kV and 0.5-mile-long 138-kV transmission lines is estimated to be about $51 million. Annual maintenance costs would be about $10,000 to $20,000.

2.3 South Alternative

The South Alternative and its routing options are the same as the action alternatives considered by BPA in the 2009 Preliminary EA for the Project. The South Alternative would consist of the following facilities (see Map 2-3):

- A new, approximately 22.5-mile-long, double-circuit 115-kV transmission line that would extend from BPA's proposed Hooper Springs Substation generally north to northeast for 6 to 8 miles before turning generally east to a proposed connection with LVE's existing transmission system in Caribou County, Idaho.
- A new 138/115-kV BPA Hooper Springs Substation, which would be located in the same location as discussed above for the North Alternative.
- A new connection facility with LVE's existing transmission system at a point about 2 miles southeast of the intersection of Blackfoot River Road and Diamond Creek Road.
- A new 0.5-mile, single-circuit 138-kV transmission line in the same location as described above for the North Alternative to connect the proposed Hooper Springs Substation to the regional transmission grid via PacifiCorp's Threemile Knoll Substation.
- Improvements and upgrades to approximately 2 miles of existing access roads along the transmission line ROW, along with associated spur roads within the ROW; and construction of approximately 22.8 miles of new permanent access roads along the transmission line ROW, along with associated spur roads within the ROW.

The South Alternative and its routing options are being considered as possible alternatives to the North Alternative; however there likely are additional legal, financial, and operational liability risks to BPA associated with the South Alternative. As discussed in Section 1.1 of this EIS, BPA discovered after completion of the 2009 Preliminary EA for the Project that the South Alternative and its options would cross one or more phosphate mining areas which may have heavy metal and selenium soil contamination. BPA is continuing to evaluate this alternative to gain a better understanding of the associated risks and the potential ability to minimize these risks by avoiding historic and current mining activity and mitigating the potential impacts of future mining in the area.

2.3.1 Easements and Land

The South Alternative corridor crosses private property and lands under federal and state ownership. Construction of the South Alternative would require easements for transmission line ROWs (120-foot-wide for the new double-circuit 115-kV transmission line and 150-foot-wide for the new 138-kV line) and access roads (50-foot-wide easement). Similar to the North Alternative, the width needed (120 and 150 feet) for the South Alternative transmission line ROW is intended to ensure that the transmission line is a safe distance from other objects and structures, such as trees and buildings.

Similar to the North Alternative, where transmission line facilities and access roads for the South Alternative would be located on privately-owned and state of Idaho lands, BPA would purchase easements from the underlying landowner. Most easements for the transmission lines would give BPA the rights to construct, operate, and maintain the line in perpetuity. On USFS- and BLM-managed land, BPA would apply to secure the necessary special use permits or easements. As with the North Alternative, while the underlying landowner would still own and use the property, BPA would not permit any uses of the transmission line ROWs that are unsafe or might interfere with constructing, operating, or maintaining the transmission facilities.

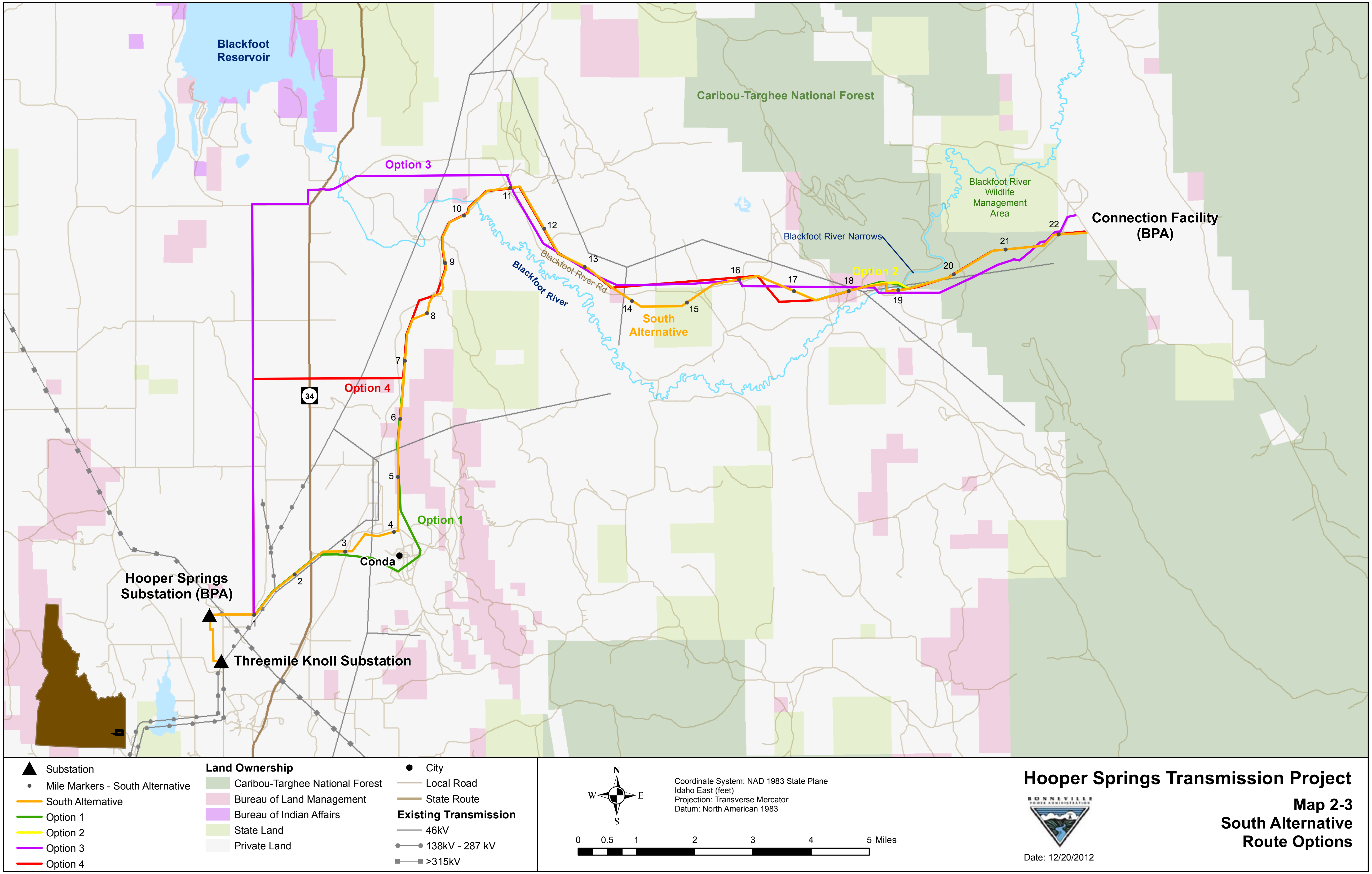
Like the North Alternative, the South Alternative also would require the purchase of approximately 6.8 acres of property for the proposed Hooper Springs Substation. At the new connection facility with LVE's existing transmission system, BPA would apply to secure the necessary special use permit from the C-TNF within LVE's existing transmission line ROW.

2.3.2 Transmission Lines

As described above, the South Alternative would involve construction of both a double-circuit 115-kV transmission line between BPA's proposed Hooper Springs Substation and a connection facility on LVE's existing transmission system, and a single-circuit 138-kV transmission line between the proposed Hooper Springs Substation and PacifiCorp's existing Threemile Knoll Substation. This section describes the elements of each of these transmission lines.

Transmission Line Routing

Map 2-3 shows the proposed route for the South Alternative. From the proposed Hooper Springs Substation, this line would head east for about 0.6 mile and then parallel the existing PacifiCorp 138-kV transmission line for about 1.4 miles until it crosses Highway 34 just south of Conda Road. The line would then travel east and northeast towards the Conda/Woodall Mountain Mine and from that point head north (just to the east of the Conda/Woodall Mountain Mine) for about 7 miles before turning in a south-easterly direction along the east side of Blackfoot River Road. Following Blackfoot River Road and the Union Pacific Dry Valley Branch Railroad for about 8 miles, the line would reach the mouth of the Blackfoot River canyon area known as the Narrows. The line would then cross perpendicular to the Blackfoot River just inside the west boundary of the C-TNF near the wider open area of the mouth of the canyon. Continuing east and northeast through C-TNF land, the line would connect the existing LVE 115-kV transmission line that runs along Diamond Creek Road at overhead line disconnect switches at the connection facility (see Section 2.3.3).


Blackfoot Reservoir
Caribou-Targhee National Forest
Option 3
Blackfoot River Wildlife Management Area
Connection Facility (BPA)
Blackfoot River Narrows
Blackfoot River Rd
Blackfoot River
Option 2
South Alternative
Option 4
34
Option 1
Conda
Hooper Springs Substation (BPA)
Threemile Knoll Substation
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
Substation
Mile Markers - South Alternative
South Alternative
Option 1
Option 2
Option 3
Option 4
Land Ownership
Caribou-Targhee National Forest
Bureau of Land Management
Bureau of Indian Affairs
State Land
Private Land
City
Local Road
State Route
Existing Transmission
46kV
138kV - 287 kV
>315kV
N
S
E
W
Coordinate System: NAD 1983 State Plane Idaho East (feet)
Projection: Transverse Mercator
Datum: North American 1983
0 0.5 1 2 3 4 5 Miles
Hooper Springs Transmission Project
Map 2-3
South Alternative Route Options
Date: 12/20/2012

Map 2-3 also shows the proposed location of the 138-kV transmission line, which would be the same as for the North Alternative.

Routing Options

Four routing options have been identified as part of the South Alternative. These routing options were initially developed and discussed as alternatives in the 2009 Preliminary EA (see Table 2-1 and Map 2-3).

Table 2-1. South Alternative Route Option Names with corresponding 2009 EA Alternative Names

Current Draft EIS Option Names	Previous 2009 EA Alternative Names
Option 1	2007 Proposed Transmission Line Route[1]
Option 2	Narrows Transmission Line Route
Option 3	Original Proposed Transmission Line Route
Option 4	Tailing Pond Transmission Line Route

[1] Option 1 was developed in 2007 to reflect comments received during the initial public scoping period for the transmission line route described in the 2009 EA as the Proposed Action (now called the South Alternative).

Source: BPA 2009

Like the South Alternative itself, all route options for the South Alternative would extend from the proposed Hooper Springs Substation to the proposed LVE connection facility. Option 1 would follow the same route as the South Alternative from the proposed Hooper Springs Substation to its crossing of Highway 34 and just south of Conda Road (Map 2-3). Option 1 would then head east on the south side of Conda Road and loop around the south and eastern edge of Conda before heading north. At a point directly east of the Conda/Woodall Mountain Mine, Option 1 would rejoin the same general route as the South Alternative and head north-northeast along Haul Road to its intersection with Blackfoot River Road. Similar to the South Alternative, Option 1 would generally follow Blackfoot River Road until it reaches the mouth of the Blackfoot River canyon known as the Narrows. From the Narrows to this option's connection with the existing LVE line, Option 1 would follow the same route as the South Alternative. This routing option would be about 23.1 miles long and would cross public lands, private agricultural and grazing lands, and mining areas.

Option 2, requested by the C-TNF, provides for an alternative crossing of the Blackfoot River at the Narrows. This option would follow the same route as Option 1 except at the Blackfoot River where the crossing would be shifted slightly from Option 1 and approximately 2,000 feet east of the crossing for the South Alternative. The Option 2 crossing of the river is wider, more open, and at the mouth of the Narrows, compared to the South Alternative, and would be located just inside the west boundary of the C-TNF (see Map 2-3). This routing option would be about 22.4 miles long and also would cross private agricultural and grazing lands, and mining areas.

Option 3 would travel east for about 0.5 mile to Three Mile Knoll Road along the same route as the South Alternative before turning north for 7 miles parallel to and about 1 mile west of Highway 34 (see Map 2-3). The option would then turn east for about 1 mile and then northeast over the

Blackfoot River for about 0.8 mile. The option would then travel about 2.7 miles before crossing over to the east side of the Blackfoot River Road. From this point, Option 3 would rejoin the same general corridor as the South Alternative with some differences to its point of connection with the existing LVE line. This routing option would be about 24 miles-long and also would cross private agricultural and grazing lands, and mining areas.

Option 4 would follow the same route as Option 3 for about 4.5 miles before turning east across Highway 34 to connect back with the proposed route for the South Alternative. From this point, the option would follow the same corridor as the South Alternative to its point of connection with the existing LVE line. This routing option would be about 23.2 miles long and also would cross private agricultural and grazing lands, and mining areas.

Transmission Structures

The South Alternative would require approximately 210 new 115-kV double-circuit steel structures over about 22.5 miles. Route options would require about the same amount steel structures as the South Alternative: Option 1 would be about 0.6 mile longer; Option 2 about 0.1 mile longer; Option 3 about 1.5 miles longer; and Option 4 about 0.7 mile longer.

Like the North Alternative, the proposed 138-kV transmission line under the South Alternative would require five wood, H-frame structures over its approximately 0.5-mile length. The 138-kV wood structures would be the same as those described under the North Alternative (see Figure 2-1).

The steel poles would be about 3 to 5 feet in diameter at the base and about 85 feet tall although structure heights at particular locations would depend on terrain, the length of the span, and other factors. Similar to the North Alternative, steel poles consist of multiple hollow sections of various lengths that are connected and embedded in the ground. To assemble and erect the suspension and dead end steel single-pole, an area about 100 feet by 100 feet (0.2 acre) would be temporarily disturbed at each site for construction equipment maneuvering and structure assembly. The disturbed areas would be restored to their original contours and revegetated with native species.

As with the North Alternative, a flat, graveled area would be constructed at each steel pole structure (except in flat areas) along the South Alternative corridor. The approximately 40 feet wide by 80 feet long (0.07 acre) area would provide a pad for a crane to sit on during assembly of the steel pole structures. Most of pads would be left in place depending on land use.

Some of double-circuit steel structures may require guy wires that provide stability to structures subject to stress, such as dead-end or angle structures. The approximate disturbance area of each guy wire would be 100 square feet and all guy wires would be placed within the ROW.

Structure Footings

Like the North Alternative, all steel structures would be directly embedded into the ground using a drill rig to auger the holes. The average hole depth for suspension structures would be approximately 15 feet and about 30 feet for dead end structures. Dead end steel pole structures could also require a concrete footing. As with the North Alternative, backfill structures would typically be brought from offsite except in limited access areas where soil and rock removed during excavation may be used as backfill.

Conductors, Overhead Ground Wires, and Counterpoise

The materials and installation methods used for conductors, overhead ground wires, and counterpoise under the South Alternative would be the same as under the North Alternative, with a couple of exceptions. First, because the transmission line from the proposed Hooper Springs Substation to the proposed LVE connection facility under the South Alternative would be a double-circuit line, six conductors (making up two circuits) would be installed under this alternative instead of the three conductors for the one circuit under the North Alternative. Second, the double-circuit steel structures for the South Alternative would require installation of one or two overhead ground wires on each structure, as compared to just one for the steel structures under the North Alternative.

Pulling and Tensioning Sites

Construction of pulling and tensioning sites and installation of snubs also would be required for the South Alternative about every 2 to 3 miles. About 12 pulling and tensioning sites would be required for construction of the South Alternative and two sites would be required for the 138-kV line. Pulling sites would be within or next to the ROW. Similar to the North Alternative, appropriate locations for pulling sites and snubs are determined by the construction contractor using environmental and land use information provided by BPA.

Staging Areas

Two temporary staging areas about 2 to 5 acres each would be needed along or near the South Alternative for construction for both the 115-kV and 138-kV lines. Similar to the North Alternative, environmental review of staging areas would be conducted prior to approval for use if necessary.

2.3.3 Substation and Connection Facilities

The location, size, and components of the proposed Hooper Springs Substation under the South Alternative would be the same as under the North Alternative.

The connection of the 115-kV double-circuit line under the South Alternative to LVE's existing transmission system at the northeastern end of South Alternative would require construction of a new connection facility at this location. This connection facility would be constructed within LVE's existing transmission line ROW along Diamond Creek Road, at a point about 2 miles southeast of the intersection of Blackfoot River Road and Diamond Creek Road. The new double-circuit line would connect into the existing LVE line through overhead line disconnect switches.

Two structures on the existing LVE line on either side of the connection point would be removed and replaced with H-frame wood pole structures. Adjacent to each H-frame structure, a disconnect switch would be mounted on an approximately 20-foot-tall lattice steel stand structure that would be about 6 feet wide and 14 feet long. Each stand would have four legs anchored in the ground using a plate footing on each leg. An approximately 400 foot by 100 foot area would be required for installation of the new H-frame wood pole structures and disconnect switches. An additional 4 foot by 12 foot platform used by the switch operator would be installed at ground level for the disconnect switches.

2.3.4 Access Roads

Like the North Alternative, new and existing access roads for the South Alternative would be graded and/or rocked to provide a 14- to 20-foot-wide travel surface with about a 20- to 30-foot-wide total disturbed area. The disturbance area would be greater than 30 feet if tree roots are present or if drainage and embankment construction work is required. Typically, a 50-foot-wide easement would be obtained from the landowner for new access roads similar to the North Alternative. Road turn-arounds also would be constructed along the South Alternative where access roads end or to minimize disturbance to adjacent sensitive resources.

The South Alternative would require the following access roads:

- Approximately 22.8 miles of new, permanent access road would need to be constructed.
- Approximately 2 miles of existing access road would need to be improved and reconstructed.

Improvement and reconstruction activities would be similar to those described for the North Alternative except stream crossing locations would be different on the South Alternative. As with the North Alternative, temporary roads required for the South Alternative would be reclaimed according to landowner requirements. For permanent roads, BPA, in coordination with landowners, would install gates at the entrances to access roads to prevent motorized public access and where fences separate animals or denote property lines. Gate locks would be coordinated with the landowners to ensure both BPA and landowner access.

2.3.5 Vegetation Clearing

Vegetation clearing under the South Alternative would be the same as described for the North Alternative.

2.3.6 Construction Sequence, Schedule, and Work Crews

Construction of the South Alternative would follow the same sequence under the same schedule and with the same work crews as described for the North Alternative, with the following exceptions:

The Lanes Creek Substation would not be constructed under the South Alternative, so would not be included in the construction process. Instead the LVE connection facility would be constructed, which would involve installation of transmission line disconnect switches. After removing the two existing structures on the LVE line on either side of the connection point, holes would be excavated with an auger for the new H-frame wood pole structures. Steel lattice structures would then be installed adjacent to the H-frame structures to support the disconnect switches. Next, the conductor would be strung from existing structures on the LVE line through the connection facility. The ground wires would also be strung using a similar method, with pulling sites on the ground to tighten the cable. Counterpoise also would be installed at the base of the new facility.

2.3.7 Maintenance

Maintenance activities under the South Alternative would be the same as described for the North Alternative.

2.3.8 Estimated Cost

Construction cost of the Hooper Springs Substation and the proposed 22-mile-long double-circuit 115-kV and 0.5-mile-long 138-kV transmission lines is estimated to be about $51 million. Annual maintenance costs would be about $10,000 to $20,000.

2.4 No Action Alternative

Under the No Action Alternative, BPA would not construct the Project. Without the new line, it is expected that voltage stability and reliability problems on the transmission grid in this area could continue. Further, the growing energy requirements of Southeastern Idaho and the Jackson Hole valley area of Wyoming may not be met.

2.5 Alternatives Considered but Eliminated from Detailed Study

BPA has considered a wide range of potential alternatives for the proposal. These include alternatives developed by BPA based on its knowledge of, and experience in, transmission line design and possible environmental issues, as well as alternatives that either were suggested by the public or given in response to concerns raised during the scoping process for this EIS. For each potential alternative, BPA assessed whether the alternative merited detailed evaluation in this EIS, or whether it could be eliminated from detailed study.

BPA considered several factors in making this assessment of potential alternatives. BPA considered whether the potential alternative would meet the identified purposes and need (see Section 1.3, Purposes). In addition, BPA considered whether the alternative would be practical and feasible from both a technical and economic standpoint and using common sense; as well as consistent with CEQ guidance on assessing the reasonableness of alternatives. Finally, BPA considered whether an alternative would have obviously greater adverse environmental effects. The alternatives that did not meet these considerations and were thus eliminated from detailed study in this EIS are described in this section.

2.5.1 Higher Voltage Transmission Line Alternative

BPA considered an alternative that would allow a direct connection of the proposed transmission line to PacifiCorp's existing 345/138-kV Threemile Knoll Substation rather than constructing the proposed 138/115-kV Hooper Springs Substation. To allow this direct connection, this alternative would require that the proposed transmission line be constructed as a 138-kV line instead of as a 115-kV line as currently proposed. This alternative also would require that LVE's existing Lanes Creek Substation be expanded to accommodate the necessary 138/115-kV transformer banks for the proposed transmission line, rather than locating these facilities at the proposed Hooper Springs Substation. This transmission line would follow a route similar to the 32-mile-long route proposed under the North Alternative.

Transmission lines built as 138-kV lines use essentially the same transmission structures as those built as 230-kV lines. These structures would result in similar structure disturbance areas and access roads as structures that would be used for the North Alternative. However, the structures under this alternative would be taller than the 115-kV structures under the North Alternative, which would result in a small increased impact on visual resources. Further, the 138-kV line would require a 150-foot-wide ROW which would require additional ROW clearing in those areas containing incompatible vegetation types (such as forests).

This alternative also would require surface disturbance for substation equipment in a previously undisturbed area. In contrast to the existing cleared agricultural field for the proposed Hooper Springs Substation, the addition of 138/115 kV transformer facilities at the Lanes Creek Substation would require expansion of this substation beyond its existing footprint into nearby undisturbed areas on C-TNF. In addition, there are topographical constraints at the Lanes Creek Substation site that could require fairly substantial filling and grading for any expansion of this substation. Given these potentially greater environmental effects, this alternative was considered but eliminated from study in this EIS.

2.5.2 Blackfoot River Road Route Alternative

This transmission line routing alternative was a variation of the four routing options considered in detail in the 2009 Preliminary EA and also being considered in this EIS. It generally followed the same transmission line routes as the South Alternative and route options, except for a routing variation where these alternatives would have first crossed Blackfoot River Road near the existing power substation at the intersection of Haul Road and Blackfoot River Road. At this point, instead of following Blackfoot River Road, the transmission line route under this alternative would continue in an easterly direction for about 3 miles. This alternative then would head generally south-southeast for about 2 miles to rejoin the transmission line routes of the South Alternative and route options. After studying this route, it was eliminated because it would result in much greater impacts on wetland areas than the South Alternative, and would only shift (rather than lessen) land use impacts on other landowners. For these reasons, this alternative was considered but eliminated from detailed study in this EIS.

2.5.3 Goshen-Lanes Creek Transmission Line Alternative

BPA considered an alternative of constructing a new 161-kV transmission line from PacifiCorp's Goshen Substation near Idaho Falls, Idaho to a connection with LVE's existing transmission system at a point near Lanes Creek, Idaho, about 10 miles southeast of Grays Lake National Wildlife Refuge. This alternative would require adding shunt capacitors on the system. The approximate length of this line alternative would be about 52 miles.

This alternative would require more capital from BPA due to increased length of the transmission line. This alternative also would require vegetation clearance and construction activities in a new 52-mile-long transmission line corridor that would create more impacts on land use, vegetation, wildlife, and other resources than the North Alternative or South Alternative. Finally, this alternative would connect to the Goshen Substation. At this point in time, any additional interconnections to this substation would be difficult to configure and could result in reliability problems. This alternative was eliminated from further consideration because of the cost, potential environmental impacts, and reliability issues.

2.5.4 Alternative BPA Substation Sites

BPA considered other possible locations for its proposed Hooper Springs Substation that would connect the proposed transmission line to PacifiCorp's existing Threemile Knoll Substation. All of these locations would be farther away from the Threemile Knoll Substation than the currently proposed location, and thus would require longer transmission line connections and would increase costs. Because of the increased costs and the potential for increased environmental impacts from longer transmission line connections, BPA eliminated these sites from further consideration.

2.5.5 Non-wires Alternative

In addition to considering alternatives that involve building new transmission lines, BPA evaluated if there were alternatives to meet the project purpose and need that would not require the construction of a new transmission line. These alternatives are referred to as "non-wires" alternatives and can involve a variety of activities not directly related to transmission facility construction such as energy conservation measures that reduce overall and peak electrical demand, development of new generation at or near areas of increasing electrical loads, and contractual load reductions from industry and others to reduce peak demand.

The 2009 Preliminary EA summarizes the consideration of non-wires alternatives for the Project at that time. As described in the EA, there was significant uncertainty as to whether sufficient non-wire measures could be implemented on a basis to fully meet the need to serve LVE during peak loads, which are continuing to increase. For this reason, non-wires alternatives were considered but eliminated from detailed study in the 2009 Preliminary EA.

Subsequent to the 2009 EA, BPA contracted with a consulting firm, Energy and Environmental Economics, Inc. (E3), to further assess potential non-wires alternatives for the Hooper Springs Transmission Project. More specifically, E3 was asked to investigate non-wires methods that could reduce and meet winter peak power demand and determine the length of time these measures could help maintain electrical reliability. E3 completed a Phase 1 non-wires screening study in January 2011. The Phase 1 study concluded that although non-wires measures could not completely replace the proposed transmission line, the Project theoretically could be deferred until 2016 or 2020 through a combination of potential energy efficiency and demand response measures, along with development of a new 20- to 30-megawatt natural gas peaking generation facility. Given the theoretical nature of the Phase 1 study, the study recommended that BPA continue to pursue the Project on its current schedule while simultaneously investigating the practical feasibility of a non-wires solution.

Based on this recommendation, BPA contracted with E3 to complete a Phase 2 study concerning non-wires practical feasibility. E3 completed the Phase 2 study in March 2012, which has been incorporated into this analysis by reference. To better assess non-wires feasibility, the Phase 2 study included refinements and updates to key parameters and assumptions, including a revised peak demand forecast for the region, revised electricity and fuel price forecasts, and revised power flow model results. Consistent with the Phase 1 study, the Phase 2 study focused on a combination of non-wires measures that included energy efficiency, demand response, fuel switching, and a new 25-megawatt natural gas-fueled local peaking generator.

The Phase 2 study concluded that a non-wires solution is not a feasible alternative for meeting the need to reliably serve LVE during peak loads within the timeframes required. BPA concurs with this conclusion primarily for the following reasons:

- LVE has not demonstrated a willingness to undertake the steps necessary for development of the new natural gas peaking generation facility that would be required for the non-wires alternative. Implementation of this alternative would require LVE to own and operate the new generation facility. The local generation component cannot progress further without LVE's commitment to complete the required evaluation of potential impacts, permitting, engineering design, financing, and procurement of long lead time items for the new generation facility. Further, LVE would need to cooperate with BPA to negotiate a long-term Power Purchase Agreement for the local generator. All indications are that LVE does not intend to pursue the local generation component of the non-wires alternative to meet the project need.
- Even if LVE indicated that it was willing to pursue development of the new generation facility, its existing natural gas pipeline and compression in the area is not adequate to meet winter peak-hour demands. To address this problem, an additional 120,000 gallons of storage capacity would need to be developed at LVE's existing liquefied natural gas facility. The time required to design and permit the reconfiguration of LVE's existing facility to accommodate this additional storage is highly uncertain, and likely would mean that this storage would not be available in time to meet the need to serve LVE during peak loads. Furthermore, although this initially increased storage capacity would be more than adequate in terms of a reliability margin, this reliability margin would decline over time as LVE loads and resulting winter peak grow, which would reduce the value of the new generation in addressing the need for the Project.
- There is only a very limited opportunity for fuel switching from electricity to natural gas (e.g. electric hot water heaters and electric space heating to natural gas heat) in the LVE and FREC service areas. This limitation exists because only about 19 percent of residential customers and 17 percent of commercial customers in LVE and FREC's combined service territory have access to existing natural gas service but do not already use gas to meet their heating needs. Fuel switching would, in theory, therefore be of only very marginal value in addressing the need for the Project. In actuality, LVE has credited a portion of their annual load growth to fuel switching from propane gas to electricity due to the lower prices of the latter.

- Telecommunications requirements for interconnection of the local generator remain unknown. Additional time would be required for the study process necessary to integrate distributed generation into Rocky Mountain Power's Balancing Authority. At this time, there is no information on the communications plan of service that Rocky Mountain Power would require, but it is expected that the study process and development of required communication paths would not be completed in time to meet the need to serve LVE during peak loads.

Overall, the combination of potential non-wires measures could at most defer, but not eliminate, the need to construct a transmission line, and there is a fundamental level of uncertainty about whether these measures could be fully implemented in time to address the growing need for the Project. Given these factors, BPA has eliminated the non-wires alternative from further detailed consideration in this EIS.

2.6 Comparison of Alternatives

BPA has evaluated the North Alternative, the South Alternative and the No Action Alternative and has compared the alternatives based on the purposes of and need for the Project, the affected environment, and environmental consequences. The results of the comparison are summarized in Tables 2-2 and 2-3. The North Alternative and the South Alternative would meet the project need; the No Action Alternative would not. Mitigation measures that would apply to the North Alternative and South Alternative are listed in Table 2-4.

Table 2-2. Comparison of North Alternative, South Alternative and No Action Alternative to Project Purposes

Purpose	North Alternative	South Alternative	No Action Alternative
Maintain reliability of BPA's transmission system to BPA and industry standards	The North Alternative would allow BPA to provide transmission system reinforcement that meets BPA and industry standards.	The South Alternative would allow BPA to provide transmission system reinforcement that meets BPA and industry standards. Crossing of current and planned mining areas and mineral lease blocks that could be developed in the future could present future operation and maintenance difficulties, including the need to relocate portions of the Project, if mining activities are conducted within close proximity to the Project.	The No Action Alternative would limit BPA's ability to provide transmission line reinforcement to improve the stability and reliability of the southeastern Idaho transmission system.

Purpose	North Alternative	South Alternative	No Action Alternative
Meet BPA's contractual and statutory obligations	The North Alternative would help BPA to maintain winter service to LVE and FREC loads under existing contracts.	The South Alternative would help BPA to maintain winter service to LVE and FREC loads under existing contracts.	The No Action Alternative is expected to result in continued voltage instability and reliability problems on the southeastern Idaho transmission grid, which may prevent BPA from meeting its contractual obligations and addressing future load growth.
Minimize project costs	Project costs were minimized to the extent practical through transmission line siting and the use of lands adjacent to or within existing substation facilities.	Project costs were minimized to the extent practical through transmission line siting and the use of lands adjacent to or within existing substation facilities.	No immediate costs would be involved if the line and substations were not built.
Minimize impacts on the natural environment	Although constructing the proposed transmission line and substations would not be free of environmental impacts, employing mitigation measures to protect resources and implementing best management practices (BMPs) during construction and operations would ensure consistency with BPA's environmental stewardship mandates.	Although constructing the proposed transmission line and substation would not be free of environmental impacts, employing mitigation measures to protect resources and implementing BMPs during construction and operations would ensure consistency with BPA's environmental stewardship mandates. This alternative is in an area of active phosphate mining that may produce contamination from heavy metals and selenium and may expose BPA to more legal, financial, environmental, and operational risk than the Northern Alternative.	If the line were not built there would not be any environmental impacts due to construction or operation.

Table 2-3. Summary of Environmental Impacts

Resource	North Alternative	South Alternative	No Action Alternative
Land Use	Impacts on agricultural land uses would be ***low*** and long term because only about 8.6 acres of cultivated lands would be permanently removed from production compared to the more than 400,000 acres of farmland in the county. On federal and state lands, construction is anticipated to result in a long-term, ***low*** to ***moderate*** impact because a limited amount of land would have restricted use or require forest clearing. Highway 34, the Pioneer Historic Byway, would be crossed in several locations, which would have a ***moderate*** impact on the visual quality and recreational use of the highway. The North Alternative corridor would cross special land use areas, such as the Gravel Creek Special Emphasis Area and federal conservation easement lands. Crossing these areas would have a **low** to **high** impact, depending on the nature of the property and the mitigation measures implemented. The North Alternative does not cross any mining areas; therefore it would have ***no*** impact on mining uses. The Long Valley Road Option would not cross state lands and would primarily cross agricultural land uses, which would result in a ***low*** to ***moderate*** impact. The North Highland Option would cross generally the same lands as the North Alternative, but would remove approximately 1.5 miles of ROW from private grazing lands and add approximately 1.2 miles of ROW to C-TNF lands. Impacts from this routing option would be ***low***.	Impacts on agricultural land uses would be ***low*** and long term because only about 10.7 acres of cultivated lands would be permanently removed from production compared to the more than 400,000 acres of farmland in the county. On federal and state lands, construction is anticipated to result in a long-term, ***low*** to ***moderate*** impact because a limited amount of land would have restricted use or require forest clearing. Highway 34, the Pioneer Historic Byway, would be crossed once, which would have a ***low*** impact on the visual quality and recreational use of the highway. Impacts of the South Alternative on proposed future mining use would be ***low*** to ***moderate***, due to its potential to affect access to phosphate resources. Impacts on land uses under Options 1 and 2 would be the same as the South Alternative because these options would cross generally the same private, state, and federal lands. Land use impacts for these two options would be ***low*** during construction and ***low*** to ***moderate*** where forested lands are crossed. Construction of the western portions of Options 3 and 4 would occur in private agricultural lands west of Highway 34 and would result in additional short-term impacts on agricultural and grazing uses. Land use impacts for these two options would be ***low*** to ***moderate*** during construction where agricultural or forested lands are crossed.	Under the No Action Alternative, land use in the project area would not be impacted.
Recreation	Construction would have short-term, ***low*** impacts on recreational facilities on C-TNF lands. Following any construction-related closures, access to recreational facilities and roads would return to normal. There are no recreational facilities on BLM or BIA land in close proximity to the Project. Operation could cause long-term, ***low*** impacts on C-TNF users and dispersed recreation; the construction of the transmission line would disturb land that was in some cases previously undeveloped and forested. On non-federal (state and private) lands, impacts on recreation use from the presence of construction equipment would be ***low*** to ***moderate*** and limited to the duration of construction. The presence of the cleared ROW and access roads would have ***no*** impact on recreational users on non-federal lands. Impacts on recreation from the Long Valley Road and North Highland options would be similar to those under the North Alternative (***low*** to ***moderate*** during construction and ***low*** during operation and maintenance).	Similar to the North Alternative, the South Alternative would have short-term ***low*** impacts on recreational facilities and long-term ***low*** impacts on dispersed recreational use on federal lands. There are no state or private developed recreational facilities within proximity to the South Alternative corridor, and similar to the North Alternative, the South Alternative will have ***low*** to ***no*** impacts on recreation on non-federal lands. Impacts from Options 1 through 4 would be the same as the South Alternative. The impacts on recreational use from the presence of construction equipment would be ***low*** and limited to the duration of construction. The presence of the cleared ROW and access roads would have ***low*** to ***no*** impact on recreational users.	Under the No Action Alternative, recreation in the project area would not be impacted.

Resource	North Alternative	South Alternative	No Action Alternative
Visual Resources	Impacts on visual resources from the North Alternative would be long term and would vary between ***low*** and ***moderate*** depending on the location and proximity of the proposed transmission line to viewers. On federal lands specifically managed for their visual resources (USFS and BLM), the North Alternative would also have long-term, ***low*** to ***moderate*** impacts on the overall aesthetics of the project area and short-term, ***moderate*** impacts during construction. The Long Valley Road Option would have short-term ***low*** to ***moderate*** impacts on those residents along or users of Long Valley Road during construction. Given the nature of the landscape and presence of other similar transmission lines, the long-term visual impacts of the Long Valley Road Option would be ***low***. Under the North Highland Option, both the short- and long-term impacts would be similar to the North Alternative; however, the transmission line would not be visible from Highway 34 between line miles 30 and 32. The North Highland Option would have long-term, ***low*** to ***moderate*** impacts on the visual resources of the area and short-term, ***moderate*** impacts during construction.	Similar to the North Alternative, long-term impacts on visual resources from the South Alternative would be long term and would vary between ***low*** and ***moderate*** depending on the location and proximity of the proposed transmission line to viewers. Impacts on the overall aesthetics of the project area during construction would be short term and ***moderate***. Impacts from Options 1 through 4 would be similar to the South Alternative.	Under the No Action Alternative, visual resources in the project area would not be impacted.
Vegetation	Impacts on forested vegetation communities from the North Alternative would be ***moderate***, due to tree clearing and fragmentation that could result in long-term changes in the vegetation community. There would be ***no*** impact on old-growth forest. Impacts on non-forested vegetation communities would be ***low*** because these habitat types are not particularly rare or limited, and most of the temporarily impacted vegetation would be expected to regrow within two growing seasons. Construction would result in long-term, ***low*** impacts on special status plant species because no special status plants were found, none of the special status species' suitable habitat is particularly rare or unique, and sufficient habitat would remain functional at local and regional scales. Long-term, ***low*** impacts from noxious weed populations would occur because there is little potential for increased spread of any "statewide control" or "early detection/rapid response" species. Impacts under the Long Valley Road Option and the North Highland Option would be similar to those described above.	Similar to the North Alternative, impacts on forested vegetation communities from the South Alternative would be ***moderate***, due to tree clearing and fragmentation that could result in long-term changes in the vegetation community. However, the area affected would be less based on the decreased length of the South Alternative. Additional surveys would be conducted to determine that there would be ***no*** impacts on old-growth forest. Impacts on non-forested vegetation communities would be ***low*** because these habitat types are not particularly rare or limited, and most of the temporarily impacted vegetation would be expected to regrow within two growing seasons. Construction would result in long-term, ***low*** impacts on special status plant species as well as long-term ***low*** impacts from noxious weeds. Impacts from Options 1 through 4 would be similar to the South Alternative.	Under the No Action Alternative, vegetation in the project area would not be impacted.

Resource	North Alternative	South Alternative	No Action Alternative
Geology and Soils	Soil productivity impacts from the North Alternative would be ***low*** due to compaction and erosion during and immediately following construction. Prime farmland soils would be permanently lost in access road beds and structures, but this loss would occur at a ***low*** level. There would be a ***low*** risk of liquefaction from construction. Shallow bedrock may require blasting, but geotechnical investigations, including exploratory borings, would be conducted prior to construction of the transmission line to ensure that excavation and blasting would not be deep enough to come into contact with phosphate deposits. The Long Valley Road Option and the North Highland Option would have similar impacts on soils and soil productivity as the North Alternative.	Similar to the North Alternative, soil productivity impacts from the South Alternative would be ***low*** due to compaction and erosion during and immediately following construction. Prime farmland soils would be permanently lost in access road beds and structures, but this loss would occur at a ***low*** level. There would be a ***low*** risk of liquefaction from construction. Shallow bedrock may require blasting, but geotechnical investigations, including exploratory borings, would be conducted prior to construction of the transmission line to ensure that excavation and blasting would not be deep enough to come into contact with phosphate deposits. Impacts from Options 1 through 4 would be similar to the South Alternative.	Under the No Action Alternative, geology and soils in the project area would not be impacted.
Water Resources, Floodplains, and Wetlands	The North Alternative would have ***low*** to ***moderate*** impacts on surface waterbodies, including water quality, because of temporary sediment impacts associated with bridge replacement work in Meadow Creek and access road crossings of intermittent waterbodies. Further, some tree removal and ground disturbance would occur in wetland and intermittent waterbody aquatic influence zones (AIZs); however, impacts on individual AIZs would be ***low***. The North Alternative would not foreclose options to classify any portion of the National Rivers Inventory (NRI) segment of the Blackfoot River as a wild, scenic, or recreation river area. ***Low*** to ***no*** impacts on groundwater resources would occur if an oil or fuel spill were to seep into the groundwater. Mitigation measures would be implemented to manage spill risks to groundwater quality. The North Alternative would have ***low*** to ***moderate*** impacts on wetlands because there would be approximately 0.05 acre of short-term impacts and approximately 1.1 acres of long-term direct impacts on wetland resources. The impacts would not functionally reduce the size, integrity, or connectivity of wetlands within the project corridor. The Project would have ***low*** impacts on floodplains as any detectable change to natural floodplain functions would be expected to be small and localized. Impacts associated with the Long Valley Road Option would be similar to the floodplain and indirect surface and groundwater impacts described above for the primary route. No National Wetland Inventory wetlands would be impacted under the route option. The North Highland Option would reduce impacts on wetlands and perennial streams because the option would move the corridor to non-wetland areas. Impacts on water resources from the North Highland Option would be ***low***.	Similar to the North Alternative, the South Alternative would have ***low*** to ***moderate*** impacts on surface waterbodies, including water quality. Construction of the South Alternative would require less riparian and wetland vegetation clearing than the North Alternative, but overall impacts would be similar to those described for the North Alternative. The South Alternative would create approximately 0.08 acre of short-term impacts and approximately 0.03 acre of long-term direct impacts on wetland resources, and therefore would have ***low*** to ***moderate*** impacts on wetlands. Tree removal and ground disturbance would occur in wetland and intermittent waterbody AIZs; however, impacts on individual AIZs would be ***low***. The South Alternative would not foreclose options to classify any portion of the NRI segment of the Blackfoot River as a wild, scenic, or recreation river area. ***Low*** to ***no*** impacts on groundwater resources would occur if an oil or fuel spill were to seep into the groundwater. Mitigation measures would be implemented to manage spill risks to groundwater quality Options 1, 2, and 3 would have the same impacts as the South Alternative: ***low*** to ***moderate*** where new and improved access roads crossings require culverts or temporary work in wetlands and ***low*** where vegetation clearing or soil disturbance occurs. Option 4 would cross a large wetland complex and open water associated with Woodall Springs. Access road construction requiring wetland fill could result in ***moderate*** to ***high*** impacts if roads are permanent.	Under the No Action Alternative, water resources, floodplains, and wetlands in the project area would not be impacted.

Resource	North Alternative	South Alternative	No Action Alternative
Wildlife	The North Alternative would result in short- and long-term, ***low*** disturbance to individuals and habitat for certain sensitive species and big game habitat. The North Alternative would result in long-term, ***moderate*** impacts on forested wildlife habitats because the forested ROW areas would be cleared and maintained in non-forested conditions. Within non-forested wildlife habitats, ***low*** impacts would occur because temporarily affected vegetation would be expected to grow back within two growing seasons and some wildlife species would temporarily leave the area during construction into plentiful nearby habitat. These wildlife species would be expected to return. Incidental wildlife mortality due to construction would be short term and ***low***, and limited to those species that are less mobile. Further, the North Alternative would have long-term, ***low*** to ***moderate*** impacts on avian species due to the potential of collision with the transmission line. The Long Valley Road Option would result in the removal of less sage brush habitat and more cultivated habitat. Because cultivated land does not provide native habitat to wildlife, the routing option would have slightly less impact on wildlife than the route summarized above (impact would be ***low*** to ***none***). The North Highland Option would result in the removal of less sagebrush and grass-dominated habitat and more conifer and aspen-dominated habitat. Therefore, impacts would be lower for wildlife species that use sagebrush and grass-dominated habitat, such as the Columbian sharp-tailed and greater sage grouse, and greater for wildlife species that use conifer and aspen-dominated habitat, such as the northern goshawk and boreal owl. Nonetheless, overall impacts of this option would be similar to the North Alternative.	As with the North Alternative, the greatest source of impacts on wildlife from the South Alternative would be short- and long-term habitat modification associated with habitat clearing for project construction. The South Alternative would result in long-term, ***moderate*** impacts on forested wildlife habitats and ***low*** impacts on non-forested wildlife habitats. Impacts on avian species due to the potential of collision with the transmission line would be long term and ***low*** to ***moderate***. Impacts on wildlife from Options 1 through 4 would be similar to those for the South Alternative.	Under the No Action Alternative, wildlife in the project area would not be impacted.
Fish	***No*** impact on fish or their habitat in the Blackfoot River, the Little Blackfoot River, or Gravel Creek would occur as a result of the North Alternative because no road work, structure construction, or vegetation clearing would occur in the AIZs associated with these waterbodies, and there would be no new access road stream crossings. In Meadow Creek, the access road improvement and associated bridge replacement would have a short-term, ***low*** impact on fish and fish habitat because the proposed new bridge could cause shoreline and instream disturbance that would increase sedimentation and turbidity. The proposed bridge would have a long-term, beneficial impact on fish by reducing bank erosion. Under the Long Valley Road Option, there would be ***no*** impact on fish or their habitat in the Little Blackfoot River The North Highland Option would not cross aquatic resources or fish habitat. Therefore, the North Highland Option would have ***no*** impact on fish or fish habitat.	The South Alternative would span the Blackfoot River in two locations and span 14 minor tributaries of the Blackfoot River. No work needed to construct, operate, or maintain the proposed transmission line would occur within actively flowing channels. Construction of access roads and structures has the potential to temporarily increase sediment loading and temperature in the Blackfoot River and its tributaries. Due to the short duration of construction activities and the use of BMPs, impacts on fish and fish habitat are expected to be short term and ***low***. Options 1, 2, and 3 would result in the same impacts on fish and fish habitat as those described for the South Alternative's crossing of the Blackfoot River and its tributaries (short term and ***low***). Option 4 would impact a wetland complex and open water bodies associated with Woodall Springs causing unavoidable impacts on fish and fish habitat. Access roads, structures, and construction vehicle use would increase sediment loading, turbidity, and temperature in fish-bearing streams and water bodies. Short-term impacts	Under the No Action Alternative, fish in the project area would not be impacted.

Resource	North Alternative	South Alternative	No Action Alternative
		during construction would be ***moderate*** to ***high*** with the use of BMPs. Long-term impacts would be ***moderate***.	
Cultural Resources	The North Alternative would have ***no*** to ***low*** impacts on cultural resources because it would avoid culturally sensitive areas and BPA would conduct pre-construction surveys and construction monitoring. The North Alternative could have impacts on cultural resources during operation and maintenance of the proposed transmission line. Once maintenance activities are identified, site-specific surveys would be conducted when necessary and described in subsequent documentation. Based on the typical type of maintenance activities it is unlikely that impacts on cultural resources would exceed a ***low*** level. The Long Valley Road Option and the North Highland Option would have impacts on cultural resources similar to the North Alternative.	As with the North Alternative, construction of structures and access roads and installation of counterpoise and pulling and tensioning sites under the South Alternative could disturb unknown cultural sites. BPA construction practices would include surveys and monitoring, therefore it is expected that construction of the South Alternative would have ***no*** to ***low*** impacts on cultural resources. Impacts during operation and maintenance of the South Alternative would be the same as those for the North Alternative (***low***). Under Options 1 through 4, the potential impacts on cultural resources would be similar to those under the South Alternative.	Under the No Action Alternative, cultural resources in the project area would not be impacted.
Socioeconomics	The North Alternative would have short-term, ***low*** impacts on public services and utilities because there would be very little increase in the local population as a result of construction. The potential impact on the agricultural industry along the route would be temporary and ***low*** to ***moderate*** due to construction-related activities disrupting agricultural activities. ***Low***, temporary positive impacts on the local economy and tax base would occur due to increased spending during construction. The North Alternative would not cross any past, present, or potential future mining areas or leases and therefore would have ***no*** impact on the mining industry. The Long Valley Road Option and the North Highland Option would have similar ***low*** impacts on socioeconomic resources.	Similar to the North Alternative, the South Alternative would have short-term, ***low*** impacts on public services and utilities and temporary, ***low*** to ***moderate*** impacts on agricultural industries due to construction-related activities disrupting agricultural activities. ***Low***, temporary positive impacts on the local economy and tax base would occur due to increased spending during construction. The reduction in mining areas under the South Alternative could result in long-term, local ***low*** to ***moderate*** impacts, depending on the value of the resource that would be no longer accessible to the mining industry. Options 1 through 4 would have similar ***low*** overall impacts on socioeconomic resources.	Under the No Action Alternative, socioeconomics in the project area would not be impacted.
Transportation	The North Alternative would have a short-term, ***low*** impact on transportation due to construction-related traffic conditions that would be expected; however, these delays would be limited because a traffic control plan would be developed. The North Alternative would have short-term, ***low*** impacts on roadway conditions because heavy loads transported on state and county roads would be within legal size and load limits or they would otherwise be required to obtain and follow permits conditions. Operation and maintenance of the North Alternative would not be expected to disrupt traffic or impact transportation infrastructure in any way and would be expected to be ***low***. The Long Valley Road Option and the North Highland Option would have similar ***low*** impacts on traffic and road conditions.	During the construction period, The South Alternative would have impacts on traffic and roadway conditions similar to those from the North Alternative. The South Alternative would impact traffic on Highway 34 to a lesser extent than the North Alternative, but would create greater traffic impacts on Blackfoot River Road. Overall, short-term impacts of the South Alternative on transportation would be ***low***. Long-term impacts from operation and maintenance would likewise be ***low***. Options 1 through 4 would have similar ***low*** impacts on traffic and road conditions.	Under the No Action Alternative in the project area would not be impacted.

Resource	North Alternative	South Alternative	No Action Alternative
Noise	The North Alternative would have varying noise impacts depending on construction activities and proximity of work to noise sensitive areas. Helicopter stringing would result in temporary ***moderate*** to ***high*** impacts because occupants of homes within approximately 1 mile of the helicopters would be exposed to temporary noise levels above 65 decibels on the A-weighted scale (dBA). Blasting also would result in short-term, ***moderate*** to ***high*** impacts because it could produce a temporary noise impact on a few residents or visitors. Operation and maintenance-related noise such as audible noise levels from corona activity during wet weather or occasional maintenance crew presence would be temporary and ***low***. The Long Valley Road Option and the North Highland Option would have the same noise impacts.	Similar to the North Alternative, construction-phase noise impacts from the South Alternative would be ***moderate*** to ***high***, although intermittent and short term. Potential noise impacts associated with operation and maintenance activities would be ***low.*** Options 1 through 4 would have the same noise impacts as the South Alternative.	Under the No Action Alternative, noise in the project area would not be impacted.
Public Health and Safety	The North Alternative would have ***low*** impacts related to hazardous waste associated with mining areas because the transmission line would span waterbodies downgradient of mining areas and construction would not result in excavation in areas of known mine footprints or contamination. Impacts associated with construction-related hazardous materials would be ***low*** because mitigation would be implemented to manage unanticipated contaminants and spills. Electric and magnetic field (EMF) impacts would be ***low***. Construction standards and grounding requirements would minimize potential nuisance shocks from electric fields near the ROW. Magnetic fields would remain comparable to ambient levels within a couple hundred feet of the ROW. As with the North Alternative, both the Long Valley Road Option and the North Highland Option would span waterbodies downgradient of mining areas and would have ***low*** impacts related to hazardous waste associated with mining areas and Superfund sites. EMF impacts would also be ***low***.	The South Alternative passes through several mining areas, including four that are currently under investigation as potential Superfund sites. Construction activities could come into direct contact with waste dumps, seeps, or mine pits. If contaminants are disturbed, impacts on workers, the general public, and environmental features from the South Alternative could be ***moderate*** to ***high***. Likewise, if ground-disturbing maintenance activities result in disturbance and release of contaminants during the operating phase of the South Alternative, the resulting impacts would be ***moderate*** to ***high***. Similar to the North Alternative, EMF impacts from the South Alternative would be ***low***. Construction standards and grounding requirements would minimize potential nuisance shocks from electric fields near the ROW. Magnetic fields would remain comparable to ambient levels within a couple hundred feet of the ROW. Options 1 through 4 would have the same impacts on public health and safety as the South Alternative.	Under the No Action Alternative, public health and safety in the project area would not be impacted.

Resource	North Alternative	South Alternative	No Action Alternative
Air Quality	Construction would have short-term, ***low*** impacts on air quality because the emissions and dust from construction vehicles and equipment would not exceed the selected general conformity de minimis thresholds. The operation and maintenance of the North Alternative corridor would be long term in nature but air quality impacts would be non-existent or ***low***. Quantities of potential emissions due to the occasional operation of maintenance vehicles on access roads would be very small, temporary, and localized. Under the Long Valley Road Option and the North Highland Option, air emissions and dust generation would be ***low*** and similar to those described above.	Similar to the North Alternative, construction of the South Alternative would have short-term, ***low*** impacts on air quality related to construction vehicle emissions and dust. Air quality impacts from the operation and maintenance of the South Alternative corridor would be long-term in nature but ***none*** to ***low***. Potential emissions from maintenance vehicles on access roads would be very small, temporary, and localized. Options 1 through 4 would have ***low*** impacts similar to those described above for the South Alternative.	Under the No Action Alternative, air quality in the project area would not be impacted.
GHG Emissions	Both short- and long-term, ***low*** impacts on GHG emissions would occur because of the estimated level of construction, operation, and maintenance emissions (<25,000 metric tons/year). Under the Long Valley Road Option, GHG emissions would be slightly larger, but would still result in ***low*** impacts on GHG emissions. Under the North Highland Option, GHG emissions would be slightly reduced and would still result in a ***low*** impact on GHG emissions.	Due to its shorter length, the South Alternative would have somewhat lower impacts than the North Alternative. Both short- and long-term impacts of the South Alternative on GHG emissions would be ***low.*** The estimated level of construction, operation, and maintenance emissions would be less than 25,000 metric tons/year. Under Options 1 through 4, GHG emissions would be slightly larger, but would still result in ***low*** impacts on GHG emissions.	Under the No Action Alternative, GHG emissions in the project area would not be impacted.

Table 2-4. Proposed Mitigation Measures for the North Alternative and South Alternative

Proposed Mitigation Measures	Land Use and Recreation	Visual Resources	Vegetation	Geology and Soils	Water Resources	Wildlife	Fish Resources	Cultural Resources	Socioeconomics	Transportation	Noise	Public Health and Safety	Air Quality/ GHG Emissions
▪ Provide a schedule of construction activities, including blasting, to all landowners who could be affected by construction.	X										X		
▪ Plan and conduct construction activities to minimize temporary disturbance, displacement of crops, and interference with agricultural activities.	X								X				
▪ Ensure that all equipment has standard sound-control devices.						X					X		
▪ Use BMPs to limit erosion and the spread of noxious weeds.	X		X	X	X	X	X						
▪ Restore compacted cropland soils as close as possible to pre-construction conditions using tillage. Break-up compacted soils where necessary by ripping, tilling, or scarifying before seeding.	X		X	X									
▪ Remove topsoil from cropland soils in a manner that will allow it to be reused after construction.	X			X									
▪ Compensate landowners for any damage to crops or property during construction or operation and maintenance activities, as appropriate.	X								X				
▪ Install barriers, gates, and postings at appropriate access points and, at the landowner's request, to minimize or eliminate public access to project facilities.	X											X	

Proposed Mitigation Measures	Land Use and Recreation	Visual Resources	Vegetation	Geology and Soils	Water Resources	Wildlife	Fish Resources	Cultural Resources	Socioeconomics	Transportation	Noise	Public Health and Safety	Air Quality/ GHG Emissions
▪ Develop the Project in compliance with state and federal resource management standards set forth in the appropriate management plans.	X												
▪ Leave undisturbed plants less than 4 feet in height within the 100-foot-wide ROW where it would not interfere with the safe operation of the transmission line to help reduce the effect of the cleared ROW on visual and aesthetic resources.		X	X			X							
▪ Utilize non-specular (non-reflective) finish on transmission lines, insulators, and other hardware to reduce reflection.		X											
▪ Use appropriate seed mixes, application rates, and seeding dates to revegetate disturbed areas following completion of construction activities.			X	X		X							
▪ Monitor reseeded areas for adequate growth and implement contingency measures as necessary.			X	X									
▪ Consult with the appropriate state or federal land management agency (USFS, BLM, or Idaho Department of Fish and Game [IDFG]) concerning any special status species, if any are identified during construction.			X			X	X						
▪ Consult with USFWS concerning any ESA-listed plant species identified in the project corridor during follow-up surveys, and implement any mitigation measures (such as feasible and appropriate avoidance measures) identified as a			X										

Proposed Mitigation Measures	Land Use and Recreation	Visual Resources	Vegetation	Geology and Soils	Water Resources	Wildlife	Fish Resources	Cultural Resources	Socioeconomics	Transportation	Noise	Public Health and Safety	Air Quality/ GHG Emissions
result of these consultations.													
▪ If other special status plant species are identified during follow-up surveys, develop appropriate avoidance measures to the extent possible.			X										
▪ Identify noxious weed populations for construction crews so these populations can be avoided when possible. Cooperate with private, county, state, and federal landowners to reduce the introduction and spread of noxious weeds, including locating vehicle wash or blow stations as appropriate to avoid the spread of noxious weeds.			X										
▪ Follow the guidelines in the noxious weed strategies used by land managers on state and federally managed land. Seed all disturbed areas as soon as possible with noxious weed-free seed (as certified by the state) to stabilize the sites. On C-TNF, use a native seed mixture approved by the forest officer. On BLM lands, use a native seed mixture approved by the BLM botanist. On state-owned lands, use a native seed mixture approved by the district biologist.			X										
▪ Cooperate with private, county, state, and federal landowners to treat noxious weeds along access roads that would be used to bring construction equipment into the project corridor to reduce the introduction and spread of noxious weeds and noxious weed seeds.			X										

Proposed Mitigation Measures	Land Use and Recreation	Visual Resources	Vegetation	Geology and Soils	Water Resources	Wildlife	Fish Resources	Cultural Resources	Socioeconomics	Transportation	Noise	Public Health and Safety	Air Quality/ GHG Emissions
▪ Follow all applicable soil and water conservation measures listed in the relevant Forest Service Handbook on C-TNF managed land.				X									
▪ Limit ground-disturbing activities to structure sites, access roads, staging areas, and the proposed substation site. As needed, stake or flag water resources, wetlands or other sensitive areas prior to construction to avoid impacts.	X		X		X	X		X					
▪ Limit road improvements to the minimum amount necessary to safely move equipment, materials, and personnel in and out of the construction area.			X	X	X	X	X			X			
▪ Minimize ground-disturbing activities, particularly in sensitive habitats.			X	X		X							
▪ Minimize construction on steep or unstable slopes, if possible.				X									
▪ Locate structures or access roads outside of previously unidentified active slides, bedrock hollows, or other geologic hazard areas, where possible.				X									
▪ Clean equipment using wash or blow stations before entering project areas, as needed.			X										
▪ Develop and implement erosion and sediment control plans.				X	X		X						
▪ Monitor erosion control BMPs during construction to ensure proper function.				X									

Proposed Mitigation Measures	Land Use and Recreation	Visual Resources	Vegetation	Geology and Soils	Water Resources	Wildlife	Fish Resources	Cultural Resources	Socioeconomics	Transportation	Noise	Public Health and Safety	Air Quality/ GHG Emissions
▪ Limit grubbing to the area around structure sites to reduce the impact on the roots of low-lying vegetation so that they can resprout.				X									
▪ Save topsoil removed for structure and temporary spur road construction and use on-site for restoration activities to promote regrowth from the native seed bank in the topsoil, where possible.			X	X		X							
▪ Use weed-free straw for erosion control during construction and restoration activities.			X										
▪ Apply herbicides according to the BPA Transmission System Vegetation Management Program EIS (DOE/EIS -0285) and label recommendations to ensure protection of surface water, ecological integrity, and public health and safety.			X		X	X	X					X	
▪ Retain existing low-growing vegetation where possible to prevent sediment movement off site.			X	X	X		X						
▪ Avoid excavation in areas of identified contaminants.				X								X	
▪ Conduct soil sampling in areas reasonable likely to be contaminated by mining waste containing selenium and other hazardous substances.												X	
▪ Construct and operate the new transmission line according to the NESC.												X	

Proposed Mitigation Measures	Land Use and Recreation	Visual Resources	Vegetation	Geology and Soils	Water Resources	Wildlife	Fish Resources	Cultural Resources	Socioeconomics	Transportation	Noise	Public Health and Safety	Air Quality/ GHG Emissions
▪ Restore reception quality if radio or television interference occurs as a result of constructing the transmission line so that reception is as good as or better than before the interference.												X	
▪ Obtain all required permits with approved wetland delineations and compensatory mitigation plans prior to construction, and implement required wetland compensation in accordance with these plans and permits.					X								
▪ Prepare and implement Spill Prevention and Response Procedures to avoid and contain accidental spills, including notification assessment, security, clean-up, and reporting requirements. The contractor would be required to follow the Spill Prevention and Response Procedures and immediately notify the proper authorities in the event of a hazardous material or petroleum spill.			X	X	X		X					X	
▪ Provide spill prevention kits at designated locations on the project site and where hazardous materials are stored.					X							X	
▪ Inspect equipment daily for potential leaks.					X							X	
▪ Design temporary and permanent access roads to control runoff and prevent erosion by using low grades, outsloping, intercepting dips, water bars, or ditch-outs, or a combination of these methods.			X	X	X		X					X	

Proposed Mitigation Measures	Land Use and Recreation	Visual Resources	Vegetation	Geology and Soils	Water Resources	Wildlife	Fish Resources	Cultural Resources	Socioeconomics	Transportation	Noise	Public Health and Safety	Air Quality/ GHG Emissions
▪ Install sediment barriers and other suitable erosion and runoff control devices prior to ground-disturbing activities at construction sites to minimize off-site sediment movement where the potential exists for construction activities to impact surface water or wetlands.				X	X		X						
▪ Implement construction site maintenance and clean-up. Keep construction areas free of debris.		X											
▪ Leave erosion and sediment control devices in place until all disturbed sites are revegetated and erosion potential has returned to pre-project conditions.			X	X	X		X						
▪ Surface all permanent access roads with rock to help prevent erosion and rutting of road surfaces and support vehicle traffic.				X	X		X			X			
▪ Minimize the amount of permanent access roads necessary for the Project to minimize the potential for wildlife collisions.						X							
▪ Avoid snag and large tree removal to the extent possible.			X			X							
▪ Cover exposed piles of soil to reduce erosion potential from rain or wind.				X	X								X
▪ Limit the amount of time soils are left exposed. Use BMPs on exposed piles of soil to reduce erosion potential from rain or wind.				X	X								X

Proposed Mitigation Measures	Land Use and Recreation	Visual Resources	Vegetation	Geology and Soils	Water Resources	Wildlife	Fish Resources	Cultural Resources	Socioeconomics	Transportation	Noise	Public Health and Safety	Air Quality/ GHG Emissions
▪ Encourage workers to cut or crush vegetation, rather than blade, in temporary disturbance areas in order to maximize the ability of plant roots to keep soil intact and prevent sediment movement off-site.			X	X									
▪ Install visibility enhancement devices on the overhead ground wires to reduce the risk of collision in areas that have been determined by the avian risk model to bear a high risk of increased avian collisions.						X							
▪ Conduct nesting bird pre-construction surveys prior to tree removal.						X							
▪ Conduct pre-construction monitoring for sage and Columbian sharp-tailed grouse leks in sage brush habitats.						X							
▪ When possible, prohibit construction activity within 10 miles of an active greater sage grouse lek and within 2 miles of active Columbian sharp-tailed grouse leks between the end of March and the beginning of May.						X							
▪ Use blasting mats to reduce noise levels.											X		
▪ Decommission temporary roads according to the requirements and BMPs of the appropriate land management agency or landowner.	X		X	X	X	X	X						

Proposed Mitigation Measures	Land Use and Recreation	Visual Resources	Vegetation	Geology and Soils	Water Resources	Wildlife	Fish Resources	Cultural Resources	Socioeconomics	Transportation	Noise	Public Health and Safety	Air Quality/ GHG Emissions
▪ Avoid manipulating or altering sagebrush stands with tall, relatively thick sagebrush that are suitable as grouse nesting habitat during the nesting period (May to June).			X			X							
▪ Consult with the C-TNF regarding construction and access within big game winter range habitat between November 15 and April 15. Within big game winter ranges, seed disturbed areas with preferred big game forage species, as recommended by the C-TNF.			X			X							
▪ Restrict public access to permanent access roads to reduce increased human impacts and to maximize big game use of the project corridor.	X					X							
▪ Install a channel spanning bridge during the appropriate in-water work window.					X		X						
▪ Maintain erosion controls near waterbodies.				X	X		X						
▪ Minimize the number of access road stream crossings during project planning.					X		X						
▪ Minimize the ground disturbance footprint of the Project, particularly in sensitive areas such as stream crossings and wetlands, and stream and wetland buffers and AIZs.			X		X		X						

Proposed Mitigation Measures	Land Use and Recreation	Visual Resources	Vegetation	Geology and Soils	Water Resources	Wildlife	Fish Resources	Cultural Resources	Socioeconomics	Transportation	Noise	Public Health and Safety	Air Quality/ GHG Emissions
▪ Cease construction near stream courses under high flow conditions, except for efforts to avoid or minimize resource damage.					X		X					X	
▪ Design and construct culverts or bridges for access roads in a manner that allows for passage.					X		X						
▪ Identify wetlands and other sensitive areas prior to initiating construction so that construction workers avoid unintentional impacts to wildlife habitat.			X		X	X							
▪ Locate refueling and servicing operations outside of AIZs. Use pumps, funnels, absorbent pads, and drip pans when fueling or servicing vehicles.					X		X					X	
▪ Site transmission structures and access roads to avoid known cultural resource sites and limit ground disturbance.								X					
▪ Document any cultural resources identified during follow-up cultural resources surveys in 2013, and delineate site boundaries of any such resources prior to construction.								X					
▪ Further confirm cultural resource sites with pre-construction surveys and construction monitoring, including necessary consultation with the Idaho State Historic Preservation Officer (SHPO), potentially affected Tribes, land management agencies, and other interested parties.								X					

Proposed Mitigation Measures	Land Use and Recreation	Visual Resources	Vegetation	Geology and Soils	Water Resources	Wildlife	Fish Resources	Cultural Resources	Socioeconomics	Transportation	Noise	Public Health and Safety	Air Quality/ GHG Emissions
▪ Prepare an Inadvertent Discovery Plan that details crew member responsibilities for reporting if cultural resources are encountered during construction. This plan should include directives to stop work immediately and notify local law enforcement officials (if appropriate); appropriate BPA personnel; BIA, BLM, and USFS staff (if appropriate); interested parties; and the Idaho SHPO.								X					
▪ Prepare a mitigation plan to protect sites if final placement of project facilities results in unavoidable adverse impacts to a significant cultural resource.								X					
▪ Provide cultural resource monitors, as necessary, to observe ground-disturbing activities in areas of previously documented cultural sites.								X					
▪ Compensate landowners for reconfiguration of irrigation systems due to placement project facilities.	X								X				
▪ Compensate landowners at fair market value for any new land rights acquired for ROW or access road easements.	X								X				
▪ Initiate discussions with local fire districts prior to construction and work with the districts and other appropriate emergency response entities to develop fire and emergency response plans.			X			X						X	

Proposed Mitigation Measures	Land Use and Recreation	Visual Resources	Vegetation	Geology and Soils	Water Resources	Wildlife	Fish Resources	Cultural Resources	Socioeconomics	Transportation	Noise	Public Health and Safety	Air Quality/ GHG Emissions
▪ Develop a traffic control plan (for circulation, safety, management, signage, and detours if necessary). Consider road conditions, wear and tear on roads, bridges, stream crossings, traffic control, post-construction repair, reclamation, and access control.										X			
▪ Comply with all county, state, and federal traffic management and road design requirements.										X			
▪ Ensure construction vehicles travel at low speeds on access roads and at construction sites to minimize dust.				X									X
▪ Limit the use of all other county, local, USFS and BLM roads for construction traffic to roads necessary to access staging areas and work sites.										X			
▪ Schedule heavy and over-sized truck trips outside of peak morning and evening commute hours.										X	X		
▪ To the extent possible, conduct noise-generating construction activities only during normal daytime hours, i.e., between 7:00 a.m. and 7:00 p.m.						X					X		
▪ Store construction materials only in designated staging areas.										X			
▪ Restore public roadways to preconstruction conditions upon completion of construction activities.										X			

Proposed Mitigation Measures	Land Use and Recreation	Visual Resources	Vegetation	Geology and Soils	Water Resources	Wildlife	Fish Resources	Cultural Resources	Socioeconomics	Transportation	Noise	Public Health and Safety	Air Quality/ GHG Emissions
▪ Prepare a Fugitive Dust Control Plan to control windblown dust, include measures to develop and implement a dust control plan.				X									X
▪ Do not burn during construction activities.													X
▪ Shut down idling construction equipment, if feasible.													X
▪ Locate staging areas as close to construction sites as practicable to minimize driving distances between staging areas and construction sites.													X
▪ Locate staging areas in previously disturbed or graveled areas to minimize soil and vegetation disturbance where practicable.			X	X									
▪ Recycle or salvage non-hazardous construction and demolition debris where practicable.													X
▪ Use local rock sources for road construction where practicable.				X					X				X

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3 Affected Environment, Environmental Consequences, and Mitigation Measures

This chapter describes the existing environmental resources that could be affected by the North Alternative and South Alternative and the potential impacts the alternatives would have on those resources. The following resources could be affected by the Project:

- Land Use
- Recreation
- Visual Resources
- Vegetation
- Geology and Soils
- Water Resources, Floodplains, and Wetlands
- Wildlife
- Fish
- Cultural Resources
- Socioeconomics
- Transportation
- Noise
- Public Health and Safety
- Air Quality

In addition, this chapter describes the potential impacts the proposed project would have on greenhouse gas emissions.

For each resource, the area potentially affected by the Project and existing information about the resource in this area is first described. This affected environment information serves as the baseline from which to evaluate the potential impacts of the alternatives. Where appropriate, the specific line mile is provided to describe the specific location of resources. In general, this chapter uses the terms "project corridor", "North Alternative corridor", and "South Alternative corridor" to identify resources actually within the proposed ROWs for the action alternatives, and the term "project area" to identify resources within the general vicinity of these ROWs.

Information about resources in the project area was obtained through research and field observations conducted by environmental specialists and from information provided in agency and public scoping comments. Field surveys of the North Alternative corridor were conducted during spring and summer 2011 and summer 2012. Additional follow-up surveys of the North Alternative corridor will also be completed in the summer 2013. Field surveys of the South Alternative corridor were conducted during the summer of 2006, 2007, and 2008. Additional follow-up surveys along the South Alternative will be conducted in winter of 2012/2013 and summer of 2013.

Next, the potential environmental consequences—i.e., the potential adverse and beneficial impacts on the resource—of the North Alternative and South Alternative are identified. The significance of these potential impacts is evaluated in terms of context (the area, timing, and duration of the impact) and intensity (the severity of the impact). Potential mitigation measures to reduce or avoid impacts on the resource also are identified, as are those impacts on the resource that are unavoidable even after implementation of mitigation. Each resource discussion concludes with a discussion of the potential impacts on the resource from the No Action Alternative.

Following the resource discussions in this chapter, this chapter evaluates the potential cumulative impacts associated with the action alternatives when combined with other past, present, and reasonably foreseeable future actions. This chapter concludes with additional EIS sections required by applicable NEPA regulations and guidance, including intentional destructive acts, irreversible or irretrievable commitment of resources, and the relationship between short-term uses of the environment and long-term productivity.

3.1 Land Use

3.1.1 Affected Environment

The project area is in Caribou County, Idaho, a largely rural county with a density of about four people per square mile (City-Data.com 2011). Agriculture is the primary land use in the county, with cultivated crops and grazing being the dominant types of agricultural uses. In total, farmland occupies about 427,000 acres in Caribou County. Large portions of the county also are forested and under federal ownership, and there also are substantial mining operations scattered throughout the county and in the project area. The city of Soda Springs is located approximately 4 miles south of the proposed Hooper Springs Substation site, and includes residential, commercial, industrial, and public facility development typical of a smaller, more rural community.

The corridor for the North Alternative crosses predominately agricultural and forested lands (see Map 3-1). The western portion of the North Alternative corridor tends to be primarily in agricultural use (mainly cultivated crops), with the eastern portion of this corridor primarily consisting of grassland, grazing, and forested areas with scattered rural residences. The North Alternative corridor does not cross any mining areas. Approximately 21 miles of the roughly 32-mile-long North Alternative corridor are located on private land, 4 miles on Idaho state lands, 5 miles on USFS land, 0.7 mile on BLM lands, and 1.7 miles on land managed by BIA. Map 3-2 depicts land ownership in the project area.

Like the North Alternative corridor, the South Alternative corridor crosses predominately agricultural and forested lands but with a higher proportion of forested lands in comparison to agricultural lands (see Map 3-1). Agricultural land along the South Alternative includes cultivated fields and seeded grasslands that could be used for grazing or hay production. In addition, the South Alternative corridor crosses several existing and planned mining areas. Of the 22-mile-long South Alternative corridor, approximately 15 miles are on private land; 1 mile is on state land; 3.4 miles are on USFS land; and 2.7 miles are on BLM land (see Map 3-2).

Land use in the project area and within the project corridor is further described in the following sections.

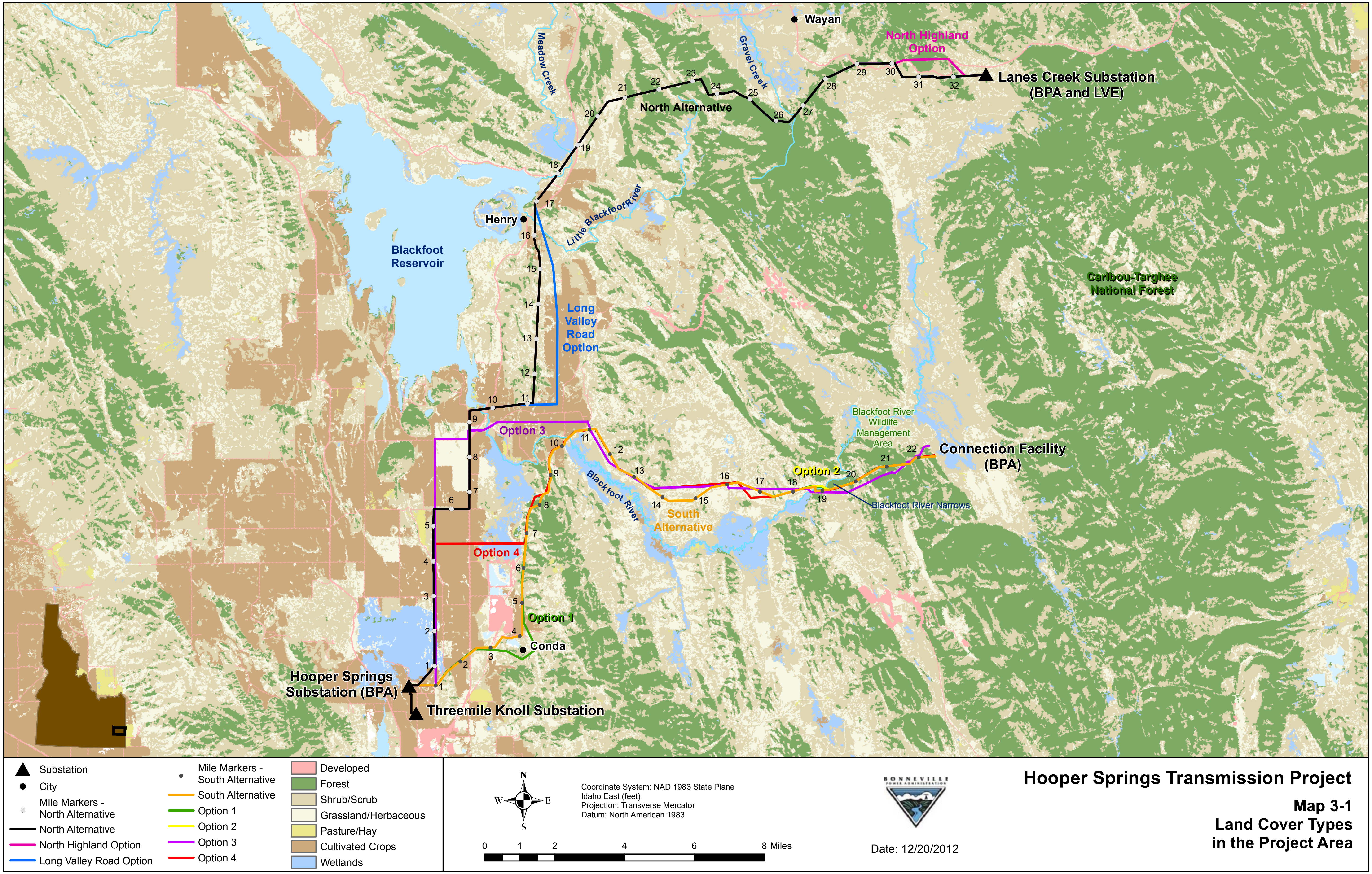
Private Lands

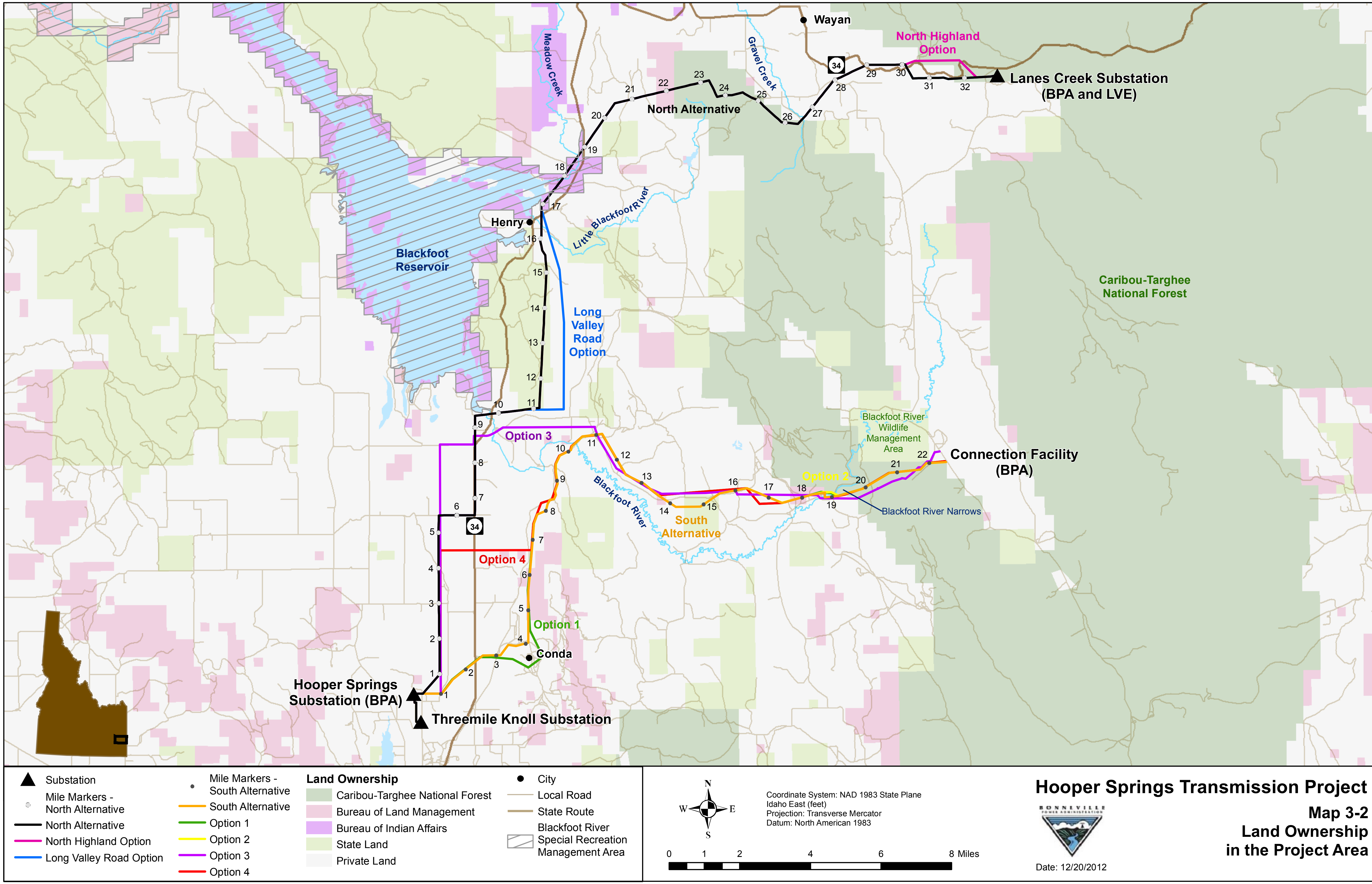
There are approximately 7,186 acres of private lands within 0.25 mile of the North Alternative corridor and approximately 5,306 acres of private lands within 0.25 mile of the South Alternative corridor, with the majority of these lands currently in agricultural use (grazing and crop cultivation). Barley is the most prevalent dry land crop, followed by grass, pastureland, and spring wheat. Almost one-third of the area is fallow or uncultivated. Map 3-1 provides information on land cover types within the project area.

Areas of prime farmland are located within and near the North Alternative corridor (Kukachka 2012, personal communication). There is no designated prime farmland in or adjacent to the South Alternative corridor. See Section 3.5, Geology and Soils, for further discussion.

North and east of the town of Henry, the North Alternative corridor crosses private agricultural parcels that are enrolled in the U.S. Department of Agriculture's (USDA) Conservation Reserve Program (CRP). The CRP is a voluntary conservation easement program administered by the Farm Service Agency. Participants limit development and agricultural uses and implement resource conservation and habitat protection measures in exchange for annual rental payments and cost-share assistance. CRP acres are lands where the landowner has agreed, through contractual arrangements, to plant long-term, resource-conserving covers such as introduced or native grasses or trees to improve the quality of water, control soil erosion, and enhance wildlife habitat (Mickelsen 2012, personal communication). No CRP lands are crossed by the South Alternative (Bybee 2012, personal communication).

The South Alternative corridor crosses several existing and planned industrial mining areas on privately-owned lands, primarily along the western portion of the project corridor. These mining-related land uses are described under "Mining Areas" below.


Wayan
North Highland Option
Lanes Creek Substation (BPA and LVE)
Meadow Creek
Gravel Creek
North Alternative
Little Blackfoot River
Henry
Blackfoot Reservoir
Long Valley Road Option
Caribou-Targhee National Forest
Blackfoot River Wildlife Management Area
Connection Facility (BPA)
Option 3
Option 2
Blackfoot River
Blackfoot River Narrows
South Alternative
Option 4
Option 1
Conda
Hooper Springs Substation (BPA)
Threemile Knoll Substation
Substation
City
Mile Markers - North Alternative
North Alternative
North Highland Option
Long Valley Road Option
Mile Markers - South Alternative
South Alternative
Option 1
Option 2
Option 3
Option 4
Developed
Forest
Shrub/Scrub
Grassland/Herbaceous
Pasture/Hay
Cultivated Crops
Wetlands
Coordinate System: NAD 1983 State Plane Idaho East (feet)
Projection: Transverse Mercator
Datum: North American 1983
0 1 2 4 6 8 Miles
Date: 12/20/2012
Hooper Springs Transmission Project
Map 3-1
Land Cover Types in the Project Area


Wayan
North Highland Option
Lanes Creek Substation (BPA and LVE)
North Alternative
Meadow Creek
Gravel Creek
Little Blackfoot River
Henry
Blackfoot Reservoir
Long Valley Road Option
Caribou-Targhee National Forest
Blackfoot River Wildlife Management Area
Connection Facility (BPA)
Option 3
Option 2
Blackfoot River
Blackfoot River Narrows
South Alternative
Option 4
Option 1
Conda
Hooper Springs Substation (BPA)
Threemile Knoll Substation
Substation
Mile Markers - North Alternative
North Alternative
North Highland Option
Long Valley Road Option
Mile Markers - South Alternative
South Alternative
Option 1
Option 2
Option 3
Option 4
Land Ownership
Caribou-Targhee National Forest
Bureau of Land Management
Bureau of Indian Affairs
State Land
Private Land
City
Local Road
State Route
Blackfoot River Special Recreation Management Area
Coordinate System: NAD 1983 State Plane Idaho East (feet)
Projection: Transverse Mercator
Datum: North American 1983
0 1 2 4 6 8 Miles
Hooper Springs Transmission Project
Map 3-2
Land Ownership in the Project Area
Date: 12/20/2012

State of Idaho Lands

The North Alternative corridor crosses a 4,624-acre parcel owned by the state of Idaho between line miles 11 and 15, and the South Alternative corridor crosses a 645-acre parcel between line miles 14 and 16 (see Table 3-1). Most of the North Alternative parcel land—about 4,135 acres, or about 89 percent of total acreage—is undeveloped shrubland or grassland. Nearly 100 percent of the land on the state-owned parcel located within the South Alternative corridor is undeveloped shrubland or grassland. Both the North and South alternative corridors cross land leasing programs operated on state lands. Existing industrial mining areas partially located on state of Idaho lands also are near the South Alternative corridor (see “Mining Areas” below).

Table 3-1. State Land Use within the Project Area[1]

Use	North Alternative Corridor Area[1] (Acres)	South Alternative Corridor Area[1] (Acres)
Developed/open space	0.0	0.0
Deciduous forest	4.8	0.0
Evergreen forest	2.1	0.0
Mixed forest	0.0	0.0
Shrub/scrub	34.9	6.9
Grassland/herbaceous	11.9	8.1
Cultivated crops	0.0	0.0
Total	**53.7**	**15.0**

Source: National Land Cover Database (USGS 2006a)

[1] Lands within the 100-foot ROW for the North Alternative and the 120-foot ROW for the South Alternative.

Grazing Lease Program

The state of Idaho’s Department of Land manages more than 1,200 grazing leases over approximately 300,000 acres of timberland and 1.5 million acres of rangeland located primarily across the southern two-thirds of Idaho (Idaho Department of Lands 2011). As noted in Table 3-1, about 1,156.4 acres of state-owned land are leased for grazing within 0.25 mile of the North Alternative corridor, and approximately 297 acres of state-owned land are leased for grazing within 0.25 mile of the South Alternative corridor. Approximately 54 acres of state grazing lands are located within the North Alternative corridor and approximately 12.5 acres leased for grazing are located within the South Alternative corridor.

Pioneer Historic Byway

The Pioneer Historic Byway is designated as an Idaho State Scenic Byway and a National Scenic Byway (U.S. Department of Transportation 2012). The entire length of Highway 34 within

Caribou County is contiguous with the Pioneer Historic Byway. The North Alternative corridor crosses Highway 34 in seven locations. The Long Valley Road and North Highland option each cross Highway 34 in one location. The South Alternative and options cross Highway 34 in one location.

The Corridor Management Plan for the Pioneer Historic Byway provides management prescriptions for preserving the visual and scenic qualities of the highway corridor (Pioneer Historic Byway Committee 2000). The Corridor Management Plan states that road building and infrastructure development within the byway corridor should minimize visual impacts, and that future installation of overhead power lines along the byway corridor should be minimized. In the case of unavoidable disturbances, the Corridor Management Plan states that materials should blend in with their backgrounds.

U.S. Forest Service Lands

The North Alternative corridor crosses approximately 5.5 miles of forest and shrub-scrub within the Soda Springs Ranger District of the C-TNF (between line mile 22 and 28 and between line mile 31 and the Lanes Creek Substation). The South Alternative crosses about 3.4 miles of forest and shrub-scrub within the Soda Springs Ranger District of the C-TNF between line miles 19 and 22). In spring 2000, the CNF and the Targhee National Forest (TNF) were officially combined to create C-TNF; however, CNF is managed pursuant to the 2003 Revised Forest Plan (RFP), and TNF is managed pursuant to the 1997 RFP (USFS 2003a and USFS 1997). The C-TNF grants special use permits for a variety of short- and long-term uses. Common land uses on the Soda Springs Ranger District include phosphate mining, logging, road building, grazing, wildlife habitat, and recreational activities such as hunting, camping, and off-highway vehicle (OHV) use.

The North Alternative and South Alternative project corridors cross the CNF portion of the C-TNF. The North Alternative corridor crosses seven Management Prescriptions as defined by the 2003 CNF RFP: 2.1.2: Visual Quality Maintenance; 2.7.2: Elk and Deer Winter Range; 5.2: Forest Vegetation Management; 3.2b: Semi-Primitive Recreation; and 2.1.6b: Gravel Creek Special Emphasis Area, and 2.8.3, Aquatic Influence Zone (AIZ). The South Alternative corridor crosses three Management Prescriptions: 2.7.2: Elk and Deer Winter Range; 5.2: Forest Vegetation Management; and 2.8.3, AIZ. Each management prescription includes management goals related to allowable uses (USFS 2003a). Management goals within each prescription related to land use are described in Table 3-2 and the management prescriptions in the North and South alternative corridors are depicted in Maps 3-3 and 3-4.

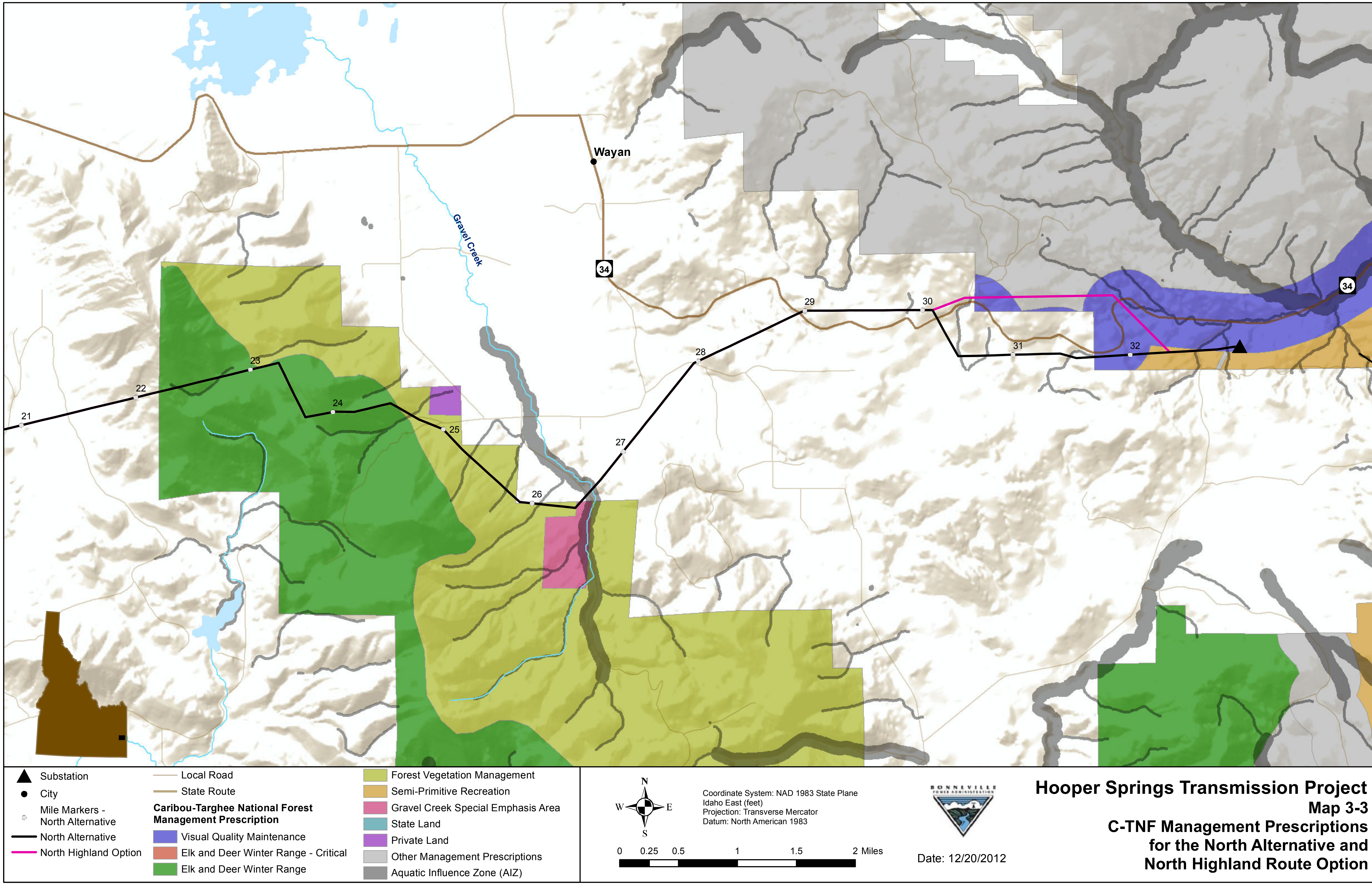
On CNF lands, the South Alternative corridor also crosses several existing industrial mining areas (see “Mining Areas” below).

Table 3-2. CNF Land Use Management Goals by Management Prescription

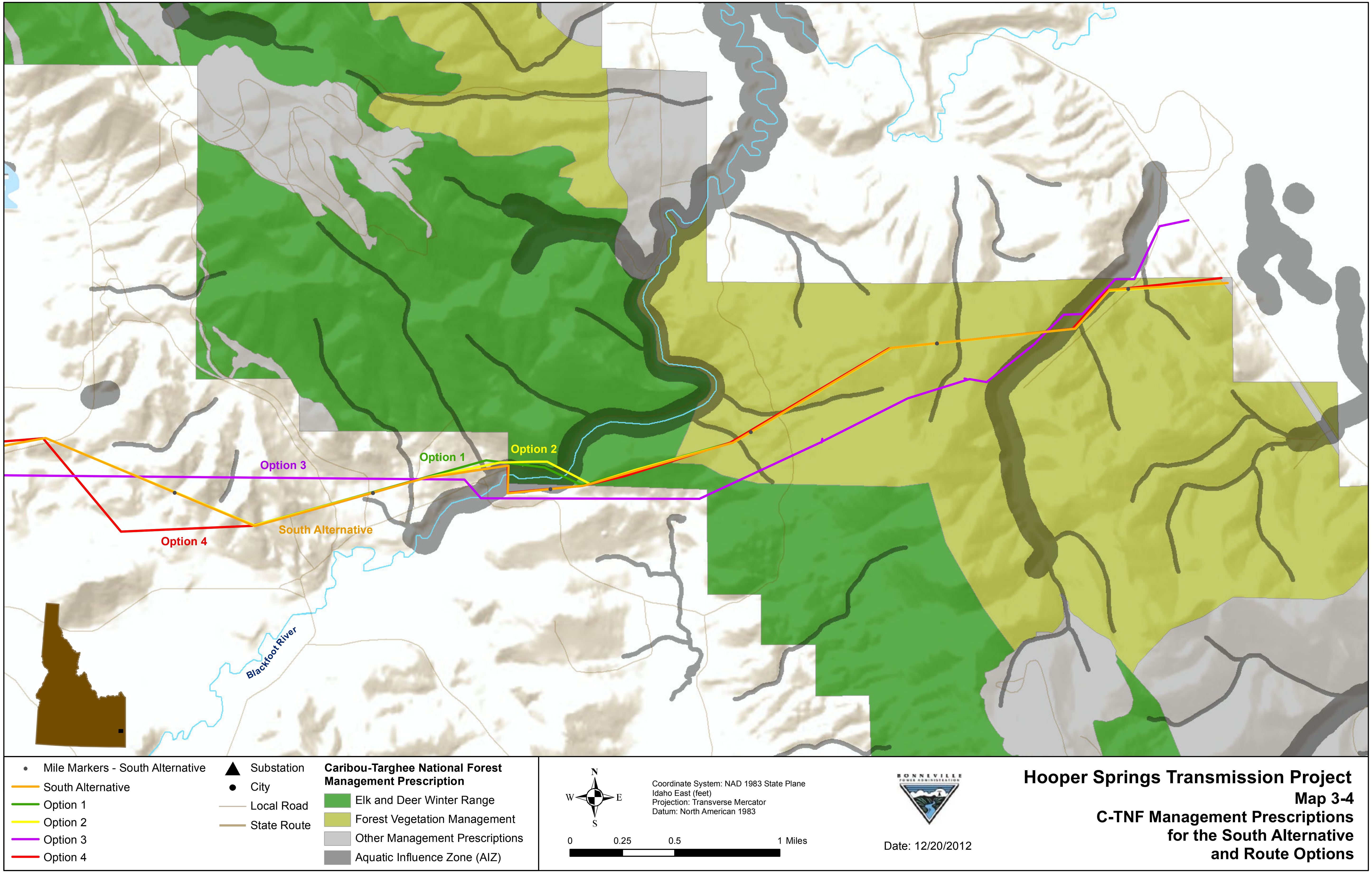
Management Prescription	Land Uses and/or Goals
2.1.2: Visual Quality Maintenance	This prescription emphasizes maintaining existing scenery within major travel corridors containing high quality natural vistas. Livestock production, timber harvest and other commodity outputs are permitted. Year-round motorized access is permitted within the Visual Quality Maintenance management prescription. Goals: 1. Manage travel corridors to protect natural visual quality. 2. Manage in an environmentally sensitive manner to promote the production of non-commodity resources at varying levels, and limited commodity production. 3. Manage to provide various dispersed recreational opportunities. 4. Provide interpretive opportunities to enhance visitors' experience.
2.7.2: Elk and Deer Winter Range	This management prescription manages for multiple land use benefits, including timber harvest and grazing, to the extent these land uses are compatible with maintaining or improving quality elk and deer winter range. Access is managed or restricted to provide security for wintering elk and deer. Summer and winter motorized travel is restricted to designated roads and trails. Goals: 1. Provide quality elk and deer winter range. 2. Livestock grazing is managed to insure forage conditions are compatible with big game winter range goals. 3. Vegetation is managed to maintain or improve cover or forage conditions needed for wintering deer and elk. 4. Human disturbance to wintering big game animals is minimized.
5.2: Forest Vegetation Management	This management prescription emphasizes wood-fiber production, timber growth, and yield. Motorized use is prevalent, both for timber management activities and recreation. Goals: 1. Lands are managed to emphasize the cost-effective production of timber its land capability and capacity. 2. Timber values are protected through fire suppression and insect and disease management. 3. Where aspen exists on suitable timber land, it will be maintained at the current level on the landscape.
3.2b: Semi-Primitive Recreation	This management prescription identifies areas with a semi-primitive, backcountry recreation experience, associated with some motorized vehicle use. Roads and trails are designed and maintained to allow easy passage. Goal: 1. Maintain or enhance semi-primitive, motorized, and dispersed recreation opportunities.

Management Prescription	Land Uses and/or Goals
2.1.6b: Gravel Creek Special Emphasis Area	This management prescription applies to 160-acre parcel of land donated to USFS as mitigation for wetland impacts from highway reconstruction on U.S. 89. Management is focused on maintaining the wetland characteristics of the area. No motorized access is allowed during summer months. Goals: 1. Management protects, conserves, and retains the floodplain and wetland values of the area according to the standards of Executive Orders 11998 and 11990. 2. The area is managed according to the Memorandum of Understanding with Idaho Transportation Department (ITD), the Federal Highway Administration, and USACE. 3. Natural disturbances and processes are allowed to play their natural role in ecological succession, except where resource values will be adversely affected.
6.2: Rangeland Vegetation Management (North Highland Option Only)	The purpose of this management prescription is to achieve and maintain healthy rangelands for livestock forage production and watershed conditions. This prescription focuses on maintaining and restoring rangeland ecosystem processes and functions to achieve sustainable resource conditions. Goals: 1. Maintain and restore ecological processes and functions of rangeland ecosystems. 2. Provide forage on a sustained-yield basis that meets rangeland values and wildlife habitat. 3. While designing management activities to meet restoration objectives, make forage and other commodity products available for purchase, to the extent possible to (1) support economic activity important to rural and tribal communities and local governments and (2) to achieve restoration objectives in an efficient and cost effective way. 4. Increase the geographic extent and connectivity of rangeland cover types and structural stages that have declined from the historic to the current period on sites where they can be sustained.
2.8.3: AIZ	This management prescription applies to the AIZ associated with lakes, reservoirs, ponds, perennial and intermittent streams, and wetlands such as wet meadows, springs, seeps, bogs and other areas. These areas control the hydrologic, geomorphic, and ecological processes that directly affect water quality and aquatic life. They also provide unique habitat characteristics important to plant and animal species that rely on aquatic, wetland, or riparian ecosystems for all or a portion of their life cycle. The AIZ management prescription provides an extensive set of goals, standards, and guidelines regarding ecological processes and patterns, land use, fish and wildlife management, and access within the AIZ. Goals, standards and guidelines for this management prescription that are applicable to the North and South alternatives are discussed in Section 4.17.6.

Source: USFS 2003a



Wayan
Gravel Creek
34
21
22
23
24
25
26
27
28
29
30
31
32
Substation
City
Mile Markers - North Alternative
North Alternative
North Highland Option
Local Road
State Route
Caribou-Targhee National Forest Management Prescription
Visual Quality Maintenance
Elk and Deer Winter Range - Critical
Elk and Deer Winter Range
Forest Vegetation Management
Semi-Primitive Recreation
Gravel Creek Special Emphasis Area
State Land
Private Land
Other Management Prescriptions
Aquatic Influence Zone (AIZ)
N
W
E
S
Coordinate System: NAD 1983 State Plane Idaho East (feet)
Projection: Transverse Mercator
Datum: North American 1983
0 0.25 0.5 1 1.5 2 Miles
Date: 12/20/2012
Hooper Springs Transmission Project
Map 3-3
C-TNF Management Prescriptions for the North Alternative and North Highland Route Option



Option 1
Option 2
Option 3
Option 4
South Alternative
Blackfoot River
Mile Markers - South Alternative
South Alternative
Option 1
Option 2
Option 3
Option 4
Substation
City
Local Road
State Route
Caribou-Targhee National Forest Management Prescription
Elk and Deer Winter Range
Forest Vegetation Management
Other Management Prescriptions
Aquatic Influence Zone (AIZ)
N
W
E
S
Coordinate System: NAD 1983 State Plane Idaho East (feet)
Projection: Transverse Mercator
Datum: North American 1983
0
0.25
0.5
1 Miles
Date: 12/20/2012
Hooper Springs Transmission Project
Map 3-4
C-TNF Management Prescriptions for the South Alternative and Route Options

Bureau of Land Management Lands

The North Alternative corridor traverses one BLM-owned parcel, located adjacent to C-TNF lands, for a total distance of 0.5 mile (at line mile 22). The South Alternative corridor crosses three BLM-owned parcels for a total distance of about 2.7 miles (between line miles 4 and 6, at line mile 14, and at line mile 18). Uses on BLM lands include phosphate mining, livestock grazing, wildlife habitat, and recreational uses such as OHV use, camping, hunting, and fishing access to Blackfoot Reservoir. BLM issues land use authorizations and easements for a variety of short- and long-term purposes. Short-term uses include agricultural leases, military training areas, and other uses involving minimal land improvements or disturbances. Long-term uses include ROWs for power lines, highways, roads, pipelines, fiber optics, communication sites, electric power generation sites, and irrigation.

BLM lands crossed by the project corridor are managed pursuant to the 1988 Pocatello Resource Management Plan (RMP). There are approximately 391 authorized ROWs within the Pocatello Field Office management area for such uses as roads, water pipelines, natural gas pipelines, power lines, telephone lines, fiber optic cables, railroads, canals, ditches, and communications sites. However, the North Alternative and South Alternative corridors do not align with any of the identified corridors in the Pocatello RMP. The Pocatello RMP sets a maximum ROW width of 1 mile, but otherwise does not contain any provisions specifically governing utility ROWs (Miller 2012, personal communication).

Existing industrial mining areas located on BLM lands also are crossed by, or are near to, the South Alternative corridor (see “Mining Areas” below).

Bureau of Indian Affairs Lands

The North Alternative corridor crosses approximately 1.7 miles of lands managed by BIA for the Fort Hall Irrigation Project near the northeastern edge of Blackfoot Reservoir (between line mile 17 and 19). There is no comprehensive land management plan or RMP in place for BIA lands in the project corridor. BIA manages these lands for multiple uses including grazing leases. The South Alternative corridor does not cross BIA-managed lands.

Mining Areas

Southeast Idaho is a major phosphate-producing region. Phosphate mining has been an important industry in this region since the mid-20th century (Petrun 1999). Map 3-5 shows existing industrial mining leases in the project area, as well as existing and proposed mine footprints. Some of these mines are currently under investigation as a Superfund site under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, 42 U.S.C. Section 9601 et seq. or have been designated for cleanup under CERCLA. The North Alternative corridor does not cross any identified mining areas, although it does pass in close proximity to several. The South Alternative corridor crosses several areas, as described in this section.

The Conda/Woodall Mountain Mine is located near the southwestern end of the South Alternative corridor (see Map 3-5). The South Alternative skirts the western boundary of past mining disturbance areas though crosses some areas of future potential mining. The land affected by mining at this mine site has had heavy and repeated ground disturbance and earthworks such as slag and tailings piles, and has been scoured and contoured for construction and mining purposes. The Ballard Mine also is located along the western portion of the South Alternative corridor less than 0.25 mile from the South Alternative corridor.

The South Alternative corridor also crosses the existing mines or investigation areas of the Wooley Valley Mine and North Maybe Mine Investigation Area (see Map 3-5). These two mine areas are under a USFS special use permit or a BLM lease to Nu-West Mining, Inc. Predecessors of Nu-West Mining have conducted extensive mine-related operations at North Maybe Mine on private lands, on C-TNF lands covered by the special use permits or leases, and on USFS land not included in the leases (USDA 2004).

Full-scale production at the North Maybe Mine began in 1965 using an open pit method of extraction. Active mining activities ceased in 1993. Open pit mining operations included removing overburden, which was either placed in piles or in a previously mined portion of the pit. The shale portion of the overburden contains selenium, as well as other contaminants that are designated hazardous substances. Selenium and other hazardous and deleterious substances are being leached from waste rock at the site into the environment, and may be impacting vegetation and surface water (USDA 2004). The North Maybe Mine entered the CERCLA program in 2004 with the signing of an Administrative Order of Consent by the affected agencies and the mine owner. Nu-West is gathering data for the Site Investigation pursuant to CERCLA under USFS oversight. Background and pollution data is being collected for surface water, groundwater, plants, and animals.

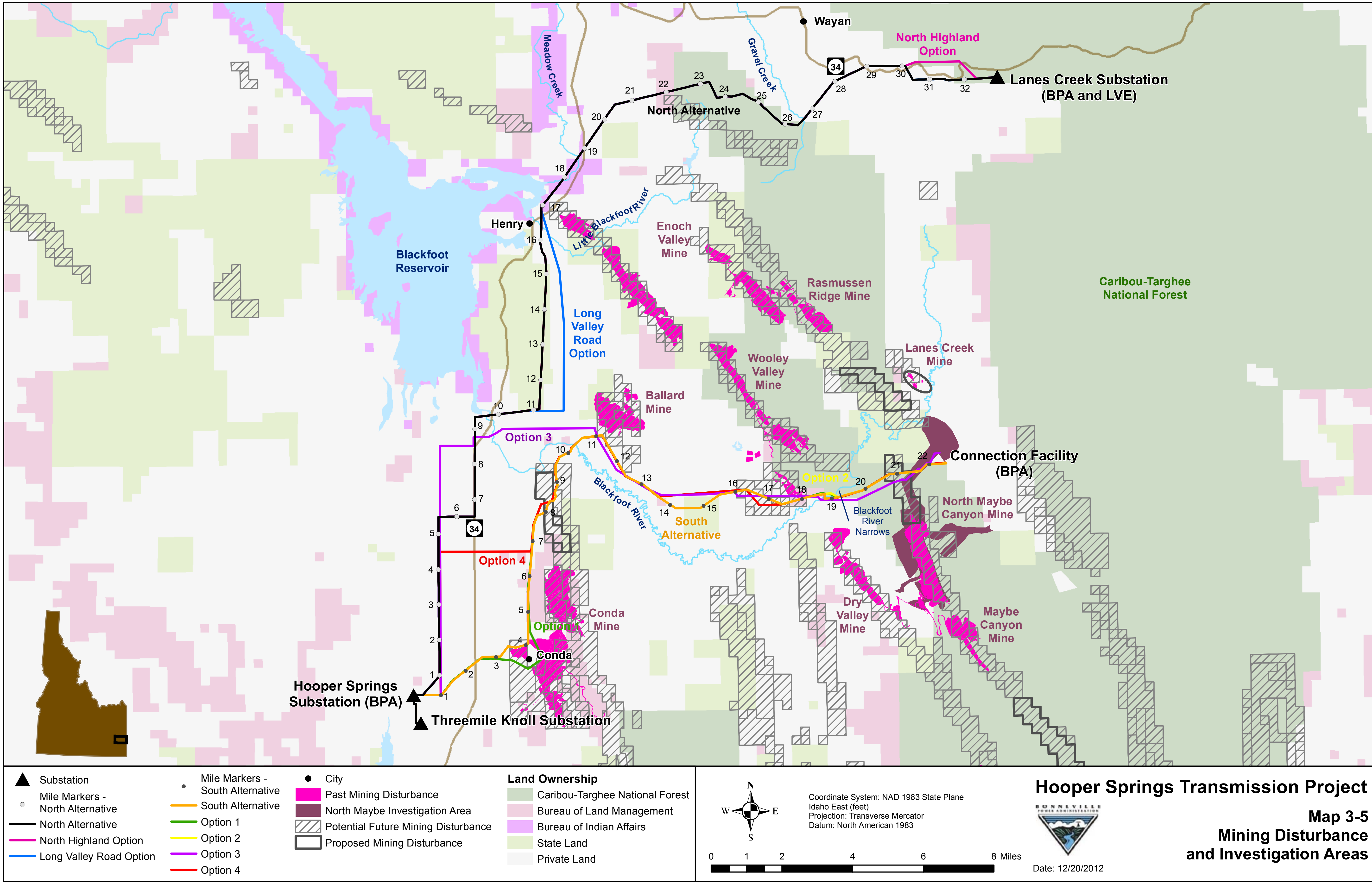
In addition, the South Alternative corridor crosses proposed new phosphate mines, including the Blackfoot Bridge Mine that would be partially located on private lands and the Husky-North Dry Ridge Mine located primarily on C-TNF with some private lands.

Section 3.13, Public Health and Safety, of this EIS provides more information on the CERCLA-related aspects of the existing mining areas in the project area.

Alternative Route Options

North Alternative Route Options

The Long Valley Road Option runs adjacent to lands owned and managed by the state of Idaho and generally parallels Long Valley Road along a 7-mile stretch between line miles 11 and 18. This option removes a portion of the North Alternative corridor that crosses approximately 4.2 miles of state lands leased for grazing and approximately 2.8 miles of private land used for grazing and crop cultivation. Instead, the Long Valley Road Option crosses approximately 7 miles of private agricultural lands that are currently in active crop cultivation and grazing use and does not cross state lands.



Wayan
North Highland Option
Lanes Creek Substation (BPA and LVE)
North Alternative
Meadow Creek
Gravel Creek
Henry
Blackfoot Reservoir
Little Blackfoot River
Enoch Valley Mine
Rasmussen Ridge Mine
Caribou-Targhee National Forest
Long Valley Road Option
Wooley Valley Mine
Lanes Creek Mine
Ballard Mine
Option 3
Connection Facility (BPA)
Option 2
Blackfoot River
North Maybe Canyon Mine
Blackfoot River Narrows
South Alternative
Option 4
Conda Mine
Option 1
Dry Valley Mine
Maybe Canyon Mine
Conda
Hooper Springs Substation (BPA)
Threemile Knoll Substation
Substation
Mile Markers - North Alternative
North Alternative
North Highland Option
Long Valley Road Option
Mile Markers - South Alternative
South Alternative
Option 1
Option 2
Option 3
Option 4
City
Past Mining Disturbance
North Maybe Investigation Area
Potential Future Mining Disturbance
Proposed Mining Disturbance
Land Ownership
Caribou-Targhee National Forest
Bureau of Land Management
Bureau of Indian Affairs
State Land
Private Land
Coordinate System: NAD 1983 State Plane Idaho East (feet)
Projection: Transverse Mercator
Datum: North American 1983
0 1 2 4 6 8 Miles
Hooper Springs Transmission Project
Map 3-5
Mining Disturbance and Investigation Areas
Date: 12/20/2012

The North Highland Option crosses private lands for the first 0.4 mile with the remainder of the option on C-TNF lands. This option removes about 1.5 miles of private land along the North Alternative corridor used for grazing and adds about 1.2 miles of C-TNF land. The North Highland Option corridor crosses 0.4 mile of forested private land along with 1.8 miles of C-TNF land, including approximately 1.2 miles governed by Management Prescriptions 2.1.2, Visual Quality Maintenance, and 0.6 mile managed under Prescription 6.2, Rangeland Vegetation Management. Grazing is one of the primary resource management emphases on lands in Management Prescription 6.2.

South Alternative Route Options

The corridors for Options 1 and 2 cross generally the same private, state, and federal lands as the South Alternative, including a portion of the Soda Springs Ranger District in the C-TNF. As stated above, BLM and C-TNF land uses include phosphate mining, logging, road building, grazing, wildlife habitat, and recreational activities. Also similar to the South Alternative, land uses on state and private lands along these options include mining and grazing. Options 1 and 2 cross the same existing and proposed mines and investigation areas as the South Alternative.

Options 3 and 4 cross private agricultural lands west of Highway 34 and change the configuration of the transmission line such that the ROW mileage for these options is increased on private lands and reduced on state and federal lands. Relative to the South Alternative, the corridor for Option 3 removes approximately 2.4 miles of ROW from C-TNF lands, 1.9 miles of from BLM lands, and 1 mile from state lands, while placing an additional 5.4 miles of ROW on private agricultural lands. The eastern portions of Options 3 and 4 cross land uses that are generally the same as those described for Options 1 and 2 and the South Alternative. As the routes for Options 3 and 4 move east, land uses are generally the same as those described for Options 1 and 2 and the South Alternative. Options 3 and 4 cross the same existing and proposed mines and investigation areas as the South Alternative except for the Conda/Woodall Mountain Mine and Blackfoot Bridge Mine.

3.1.2 Environmental Consequences of the North Alternative

Construction of the North Alternative would convert existing land use within the transmission line ROW from primarily agricultural and forested lands to a utility corridor. Since there are no existing or currently planned mining areas within the North Alternative corridor, this alternative would not impact mining uses. BPA would acquire easements for the ROW and associated access roads from private landowners for the North Alternative. Additionally, BPA would obtain permits or easements for ROW and access roads from the state of Idaho, C-TNF BLM, and BIA. BPA would obtain a special use permit from the C-TNF and enter into a cooperating agreement with LVE for the use of a portion of its existing substation land. The land proposed for the Hooper Springs Substation would be purchased by BPA from the private landowner. Table 3-3 displays the acres of ROW required on private, state, C-TNF, BLM, and BIA lands for the North Alternative and route options. Also shown are miles of new permanent and improved or reconstructed access roads required. Tables 3-4 and 3-5 identify the acres of each land use that would be permanently and temporarily impacted by new and improved roads, ROW, structures and substations for the North Alternative and route options.

Land uses incompatible with the North Alternative, such as mining and logging, would not be allowed within the ROW. Given the small quantity of land that would be occupied by the North Alternative relative to the lands available for these uses, the overall impact associated with the prohibition of incompatible uses in the ROW would be long term, but ***low***.

The following describes the potential impacts of the North Alternative on land uses by land ownership.

Private Lands

Construction of the transmission line and access roads, along with the use of staging areas, conductor pulling sites, would result in the temporary disruption of existing agricultural and grazing uses on private lands within the ROW. These short-term disruptions would result from ground disturbance and the presence of equipment during installation of structures, stringing of conductors, and construction of access roads. Disruption of agricultural and grazing uses would be localized to areas of active construction operations; therefore, a large portion of vegetation within the ROW would remain unaffected during the construction period. Due to the temporary nature of these impacts and the abundance of agricultural use in the county, the impact on agricultural use on private lands from construction of the transmission line would be short term and ***low***. Implementation of BMPs described in Section 3.1.4, Mitigation also would lessen impacts on land uses.

Construction of the Hooper Springs Substation would permanently remove 6.8 acres of farmland from agricultural use and change it to a utility use. Removing this small amount of acreage from production would have a long-term, ***low***, impact on agricultural productivity because there are more than 400,000 acres of farmland in the county.

Table 3-3. Landownership Crossed by the North Alternative and Route Options

Landowner	North Alternative				Long Valley Road Option[1]	North Highland Option[1]
	ROW (acres)	Access Roads (miles)			ROW (acres)	ROW (acres)
		New Permanent	Improved	Total		
Private	**256.2**	9.0	5.2	**14.2**	315.3	234.5
Federal	**95.7**	**9.5**	**1.2**	**10.7**	95.7	110.5
C-TNF	66.5	8.1	0	**8.1**	66.5	81.3
BLM	6.3	0.4	0	**0.4**	6.3	6.3
BIA	22.9	1	1.2	**2.2**	22.9	22.9
State	53.7	5.2	1.7	**6.9**	0.0	53.7
Total	**405.6**	**23.7**	**8.1**	**31.8**	**411.0**	**398.7**

[1] Design data for roads and structures is currently unavailable for the Northern Alternative Route Options.

Table 3-4. Permanent and Temporary Impacts on Land Uses from the North Alternative

	North Alternative					
	Permanent Impacts (acres)				Temporary Impacts (acres)[3]	
Land Cover Type	New and Improved Roads[1]	ROW and Structures[2]	Sub-station	Total	ROW and Structures[2]	Total
Developed/Open	4.0	<0.1 (0.01)	0.0	**4.0**	3.4	3.4
Deciduous Forest	2.5[2]	34.4	0.0	**36.9**	1.3	1.3
Evergreen Forest	7.8[2]	52.8	0.0	**60.6**	3.7	3.7
Mixed Forest	0.0	1	0.0	**1**	0.0	0.0
Shrub/ Scrub	49.9	<0.1 (0.03)	0.0	**49.9**	16.5	16.5
Grassland/ Herbaceous	22.5	<0.1 (0.01)	0.0	**22.5**	6.2	6.2
Cultivated Crops	1.8	<0.1 (0.02)	6.8	**8.6**	7.1	7.1
Emergent Herbaceous Wetlands	0.4	<0.1 (0.005)	0.0	**0.4**	0.9	0.9
Woody Wetlands	0.1	<0.1 (0.0002)	0.0	**0.1**	0.1	0.1
Total	**89.0**	**88.2**	**6.8**	**184.0**	**39.2**	**39.2**

Source: USGS 2006a

[1] Acreage of impacts from access roads assumes 30-foot wide area of impact.

[2] For forested land cover types, includes only access roads located off-ROW, since on-ROW access roads are considered to be part of the permanent ROW impacts.

[3] Includes temporary construction-related disturbance from structures and pulling sites. Temporary disturbance from structures for the North Alternative is assumed to be 0.2 acre for angle and dead-end structures and 0.1 acre for all other structures.

Table 3-5. Permanent and Temporary Impacts on Land Uses from the North Alternative with Route Options

Land Cover Type	North Alternative with Long Valley Road Route Option					North Alternative with North Highland Route Option				
	Permanent Impacts (acres)			Temporary Impacts (acres)		Permanent Impacts (acres)			Temporary Impacts (acres)[4]	
	ROW and Structures[1]	Sub-station	Total[2]	ROW and Structures[1]	Total	ROW and Structures[1]	Sub-station	Total[2]	ROW and Structures[1]	Total
Developed/ Open	*	0.0	*	38.3	38.3	*	0.0	*	38.4	**38.4**
Deciduous Forest	30	0.0	*	0.0	0.0	38.2	0.0	*	0.0	**0.0**
Evergreen Forest	50.7	0.0	*	0.0	0.0	59.1	0.0	*	0.0	**0.0**
Mixed Forest	1	0.0	*	0.0	0.0	1.0	0.0	*	0.0	**0.0**
Shrub/ Scrub	*	0.0	*	114.53	114.53	*	0.0	*	130.2	**130.2**
Grassland/ Herbaceous	*	0.0	*	57.7	57.7	*	0.0	*	59.4	**59.4**
Cultivated Crops	*	6.8	*	106.83	106.83	*	**6.8**	*	60.3	**60.3**
Emergent Herbaceous Wetlands	*	0.0	*	11.1	11.1	*	0.0	*	11.1	**11.1**
Woody Wetlands	*	0.0	*	0.8	0.8	*	0.0	*	0.8	**0.8**
Total	**81.7**	**6.8**	*	**329.26**	**329.26**	**98.3**	**6.8**	*	**300.2**	**300.2**

Source: USGS 2006a

[1] For forested land cover types, includes only access roads located off-ROW, since on-ROW access roads are considered to be part of the permanent ROW impacts.

[2] Acreage of impacts from structures assumes 12 square feet of permanent impacts from wooden H-frame structures and 29 square feet of permanent impacts from single-pole steel structure footings. ROW impacts are assumed to be permanent for forested land cover types and temporary for all other land cover types.

[4] Includes temporary construction-related disturbance from structures and pulling sites. Temporary disturbance from structures for the North Alternative is assumed to be 0.2 acre for angle and dead-end structures and 0.1 acre for all other structures.

Long-term impacts during the operational phase of the North Alternative would include use limitations within the ROW, such as keeping the ROW clear of all structures, fire hazards, tall growing vegetation (such as trees) and any other use that may interfere with the safe operation or maintenance of the transmission line. The ability to have vegetation growing within the North Alternative ROW is a use that would be reviewed by BPA to determine whether the use is safe, if there is adequate clearance under the conductor, and whether the use creates interference with the operation and maintenance of the transmission facilities. If BPA determines that the use is compatible, a written agreement could be entered into between BPA and the landowner. Most non-woody, low growing crops less than 4 feet high could be grown safely under the transmission line. However, any shrubs, brush or other vegetation (such as orchards, Christmas trees, tall-growing landscape or natural vegetation) would require a BPA review of special consideration, but would likely not be allowed within the ROW. Agricultural operations would not be restricted, but certain precautions would be necessary. For example, no object should be raised higher than 14 feet above the ground within the ROW (i.e., when irrigation pipes are moved, they should be kept low and parallel to the ground); ground elevation should not be altered (such as piling of dirt within the ROW); irrigation spray should not create a continuous stream onto the conductors or structures; fences should be grounded; and installation of underground pipes or cables through the ROW would require coordination with BPA to avoid interference with transmission line grounding systems. Vehicles and large equipment that do not extend more than 14 feet high, such as harvesting combines, cranes, derricks and booms could be operated safely under the transmission line where it passes over roads, driveways, parking lots, cultivated fields or grazing lands.

Grassland and shrub-scrub vegetation tends to be compatible with transmission lines, because animals would be able to graze within the ROW. Although structure footprints and road beds would occupy land, thus removing areas of vegetation from grazing, livestock could still maneuver around the structures and roads; the long-term impact from the North Alternative on agricultural lands would be ***low***.

The North Alternative corridor would traverse one private agricultural parcel enrolled in the USDA’s CRP, though additional parcels enrolled in the CRP program may be identified during the landowner easement negotiation process. Transmission lines may be permitted on lands enrolled in the CRP, provided that vegetative cover damaged or cleared during construction is restored; erosion is kept to a minimum; impacts on habitat, water, and air quality are avoided; and consultation is undertaken with the Farm Service Agency (Bybee 2012, personal communication). BPA would avoid permanent access road development on CRP lands, to the extent practicable. During construction, activities associated with the placement of transmission line structures would result in ground disturbance and crushing or clearing of vegetation. With implementation of the BMPs described in Section 3.1.4, Mitigation, disturbed areas would be revegetated after construction so short-term impacts on CRP lands would be ***low.*** Given that the amount of vegetative cover permanently destroyed would be limited to the area occupied by structure footings, the North Alternative also would have ***low*** to ***no*** long-term impacts on CRP lands.

During operation and maintenance of the North Alternative, impacts on private land uses also could occur from the occasional presence of work vehicles and equipment for routine patrols, line repairs, and vegetation management. While operation and maintenance activities could result in noise, visual, and other impacts on private land uses, they would not be expected to result in actual changes or substantial limitations in uses of adjacent land. Accordingly, any disruption of private land use activities associated with operation and maintenance of the Project would be short term and ***low***.

State and Federal Lands

While state and federal land users would likely notice the presence of the proposed ROW, structures, and access roads, it is unlikely that the North Alternative would result in an adverse impact on state or federal land uses or overall land use patterns. All proposed improvements at the Lanes Creek Substation would take place within the boundaries of the existing substation; therefore, ***no*** impacts on land use are expected. Areas without structures within the North Alternative corridor would continue to be used for existing purposes that are compatible with the transmission line corridor, such as grazing, recreation, and public access. In areas used for agriculture and grazing, construction of the proposed transmission line would result in both short- and long-term, ***low*** impacts similar to those described for private lands.

Construction of the transmission line ROW and access roads on forested lands would remove all trees within the ROW and access roads, as well as danger trees adjacent to the ROW, and would permanently convert the land to non-forested areas throughout the life of the Project. Approximately 5.9 miles of transmission line ROW and 8.5 miles of access roads would traverse federal lands (BLM and C-TNF) that support forest vegetation. These areas are described in the 2003 CNF RFP as significantly modified by roads, grazing, and timber harvest. Approximately 2 miles or 21 acres of the transmission line ROW would extend across areas of the C-TNF that are specifically managed for timber harvest. The North Alternative would result in the permanent removal of approximately 31 acres of forest vegetation for access road construction and placement of structures, and the conversion of approximately 88 acres of ROW to non-forested vegetation (see Section 3.4, Vegetation). Given the relatively small amount of forested acreage compared to the quantity of forested areas on nearby BLM and USFS lands, the short- and long-term impacts on forested public lands would be ***low*** to ***moderate.***

Because C-TNF forested lands would be converted to a utility use, the North Alternative would not be consistent with the seven management prescriptions identified in Table 3-2. An amendment to the 2003 CNF RFP would be necessary to establish the transmission line ROW as a utility corridor under management prescription 8.1, Concentrated Development Areas. The North Alternative also would be required to comply with associated standards and guidelines for Concentrated Development Areas, in addition to all applicable forest-wide standards and guidelines. See Appendix A, CNF RFP Amendment, for analysis of the Project's consistency with applicable forest-wide standards and guidelines as well as those for Concentrated Development Areas.

Approximately 0.1 mile of the transmission line ROW under the North Alternative would cross the USFS Gravel Creek Special Emphasis Area. No structures or access roads are proposed to be located within this area. Since most of the ROW crossing is forested, placement of the ROW across the Gravel Creek Special Emphasis Area would result in the clearing of up to 1.2 acres of forest vegetation for the creation of the new ROW. ROW and danger tree clearing would result in the conversion of land cover on the property, which would not be consistent with the existing management of this parcel for wetland mitigation purposes; therefore, the establishment of a new ROW across this area would result in short- and long-term, ***high*** impacts. BPA is currently working with USFS to further avoid or minimize potential project-related impacts on this area.

The North Alternative would be visible from Highway 34, which is contiguous with the Pioneer Historic Byway. Construction of the transmission line and access roads would not be consistent with the Corridor Management Plan resulting in a ***moderate*** impact on the scenic qualities of the byway and recreational use by travelers. In an effort to reduce visual impacts, the transmission line would be sited to blend in with the background to the extent possible. Where the transmission line would parallel or cross Highway 34, the transmission line would be in the foreground and obvious to motorists; however, for large portions of the North Alternative corridor, the transmission line would be partially or completely obscured by topography. This would especially be true for the portion of ROW crossing state lands east of Highway 34, and the portion crossing BLM and USFS lands in the northeastern part of the project corridor. Section 3.3, Visual Resources describes the impacts on visual quality along the Pioneer Historic Byway from the North Alternative.

During operation and maintenance of the North Alternative, impacts on state and federal land uses would be similar to those described for private land uses (short term and ***low***).

Mining Areas

The North Alternative would not cross any past, present, or potential future mining areas or leases and therefore would have ***no*** impact on mining.

North Alternative Route Options

Long Valley Road Option

As discussed above, the Long Valley Road Option would avoid siting a portion of the proposed transmission line ROW and associated access roads for the North Alternative on undeveloped shrub-scrub state lands currently used for grazing. Instead, this ROW and associated access roads would be located on private agricultural lands. These lands are currently in active grazing and crop cultivation; therefore, with the Long Valley Road Option, the North Alternative would result in up to 78 additional acres of impacts on private agricultural use. Furthermore, the Long Valley Road Option would cross approximately 9.3 additional acres of prime farmland.
Table 3-5 identifies the total acreages of each type of land cover that would be impacted by the North Alternative if the Long Valley Road Option was incorporated. Under the Long Valley Road Option, short-term impacts resulting from construction activities as described above would be slightly higher, since the increased acreage of agricultural lands within the alternative corridor would increase the potential for disruption of agricultural use; short-term impacts would be ***low*** to ***moderate***.

It is unlikely that the presence of the transmission line ROW would result in a long-term change to overall land use under the Long Valley Road Option As detailed above, existing crop cultivation and grazing activities are generally compatible with the presence of a transmission line ROW, and would be expected to continue following completion of construction. Long-term impacts on private agricultural land use along the Long Valley Road Option would be ***low***.

As described above, this option would not cross any past, present, or potential future mining area or lease and therefore would have ***no*** impact on mining.

North Highland Option

As discussed above, the North Highland Option would move ROW and access road impacts from undeveloped shrub-scrub and grasslands currently used for grazing to C-TNF lands and a small area of forested private lands. The impacts on private lands would be less than the impacts on private lands by the North Alternative corridor in this area. More C-TNF forested land would be cleared with this option (about 98 acres compared to about 88 acres along the North Alternative).

Under the North Highland Option, short-term impacts from construction of the transmission line would be similar to those for the North Alternative above, and would be ***moderate***. Long-term impacts on shrub-scrub lands would be ***low,*** as grazing would continue following completion of construction. Long-term impacts on forested lands resulting from clearing of the ROW would be slightly higher under the North Highland Option than under the North Alternative, since additional forest would be converted to non-forested land, resulting in a long-term change to overall land use where the ROW crosses the C-TNF. Because only low growing vegetation would be allowed on the ROW, long-term impacts on forested land uses would be ***moderate.***

As described above, this option would not cross any past, present, or potential future mining area or lease and therefore would have ***no*** impact on mining.

3.1.3 Environmental Consequences of the South Alternative

Similar to the North Alternative, construction of the Project using the South Alternative would convert existing land use with the transmission line ROW from primarily agricultural and forested lands to a utility corridor. Unlike the North Alternative, however, the South Alternative would have the potential to impact existing or currently planned mining uses since the corridor for this alternative does cross existing or currently planned mining areas.

Like the North Alternative, BPA would acquire easements or permits for ROW and access roads from private and state landowners for the South Alternative. The same land for the proposed Hooper Springs Substation would be purchased by BPA from the private landowner. Table 3-6 displays the acres of ROW required on private, state, C-TNF, and BLM lands; miles of new permanent, improved, and temporary access roads for the South Alternative and routing options; and Tables 3-7 and 3-8 display the acres of each land use that would be permanently and temporarily impacted.

As with the North Alternative, land uses incompatible with the South Alternative, such as mining and logging, would not be allowed within the ROW. However, given the small quantity of land that would be occupied by the South Alternative relative to the lands available for these uses, the overall impact associated with the prohibition of incompatible uses in the ROW would be long term, but ***low***.

Table 3-6. Landownership Crossed by the South Alternative and Route Options

Landowner	South Alternative				Option 1[1]	Option 2[1]	Option 3[1]	Option 4[1]
		Access Roads (miles)						
	ROW (acres)	New Permanent	Improved	Total	ROW (acres)	ROW (acres)	ROW (acres)	ROW (acres)
Private	227.5	14.8	1.6	16.4	250.3	221.1	306.6	**271.8**
Federal	**88.4**	**6.9**	**0.4**	7.3	**88.8**	**92.6**	**46.5**	**69.9**
C-TNF	48.9	4.0	0	4.0	53.0	53.8	34.9	48.6
BLM	39.5	2.9	0.4	3.3	35.8	38.8	11.4	21.2
BIA	0	0	0	0	0	0	0	0
State	15.0	1.1	0	1.1	0	15.0	0	0
Total	**330.9**	**22.8**	**2.0**	**24.8**	**339.1**	**328.7**	**353.1**	**341.7**

[1] Design data for roads and structures is currently unavailable for the Southern Alternative Route Options.

Table 3-7. Permanent and Temporary Impacts on Land Uses from the South Alternative

Land Cover Type	South Alternative					
	Permanent Impacts (acres)				Temporary Impacts (acres)	
	New and Improved Roads[1]	ROW and Structures[2]	Sub-station	Total	ROW and Structures[3]	Total
Developed/ Open	1.4	<0.1 (0.004)	0.0	**1.4**	2.5	2.5
Deciduous Forest	1.6[2]	6.2	0.0	**7.8**	0.9	0.9
Evergreen Forest	6.2[2]	50.5	0.0	**56.7**	3.4	3.4
Mixed Forest	0.0	0.8	0.0	**0.8**	0.0	0.0
Shrub/ Scrub	40.7	<0.1 (0.06)	0.0	**40.7**	28.4	28.4
Grassland/ Herbaceous	26.5	<0.1 (0.04)	0.0	**26.5**	16.9	16.9
Cultivated Crops	5.3	<0.1 (0.01)	6.8	**12.1**	6.2	6.2
Emergent Herbaceous Wetlands	0.0	0.0	0.0	**0.0**	0.3	**0.3**
Woody Wetlands	0.1	0	0.1	**0**	0.3	**0.3**
Total	**81.8**	**57.5**	**6.8**	**146.1**	**58.9**	**58.9**

Source: USGS 2006a
[1] Acreage of impacts from access roads assumes 30-foot wide area of impact.
[2] For forested land cover types, includes only access roads located off-ROW, since on-ROW access roads are considered to be part of the permanent ROW impacts.
[3] Includes temporary construction-related disturbance from structures and pulling sites. Temporary disturbance from structures for the South Alternative is assumed to be 0.2 acre for all structures.

Table 3-8. Permanent and Temporary Impacts on Land Uses from South Alternative Route Options

Land Cover Type	Option 1					Option 2				
	Permanent Impacts (acres)			Temporary Impacts (acres)		Permanent Impacts (acres)			Temporary Impacts (acres)	
	ROW and Structures[1]	Sub-station	Total	ROW and Structures[2]	Total	ROW and Structures[1]	Sub-station	Total	ROW and Structures[2]	Total
Developed/ Open	*	0.0	*	*	*	*	0.0	*	*	*
Deciduous Forest	6.2	0.0	*	*	*	6.3	0.0	*	*	*
Evergreen Forest	47.4	0.0	*	*	*	47.5	0.0	*	*	*
Mixed Forest	0.6	0.0	*	*	*	0.8	0.0	*	*	*
Shrub/ Scrub	*	0.0	*	*	*	*	0.0	*	*	*
Grassland/ Herbaceous	*	0.0	*	*	*	*	0.0	*	*	*
Cultivated Crops	*	6.8	*	*	*	*	6.8	*	*	*
Emergent Herbaceous Wetlands	*	0.0	*	*	*	*	0.0	*	*	*
Woody Wetlands	*	0.0	*	*	*	*	0.0	*	*	*
Total	**54.2**	**6.8**	*	*	*	**54.6**	**6.8**	*	*	*

Source: USGS 2006a

1 ROW impacts are assumed to be permanent for forested land cover types and temporary for all other land cover types.

2 Design data for roads and structures is currently unavailable for the Northern Alternative Route Options; therefore, the full extent of land use impacts cannot be calculated.

The following describes the potential impacts of the South Alternative on land uses by land ownership.

Private Lands

Impacts under the South Alternative from construction of the transmission line, access roads, staging areas, conductor pulling sites would result in the same temporary disruption of grazing and agricultural use on private lands as described for the North Alternative, although these impacts would occur within the South Alternative corridor rather than the North Alternative corridor. Short-term disruptions from ground disturbance and the presence of construction equipment would be localized to areas of active construction; therefore, rangeland vegetation and cultivated cropland outside of these areas would remain unaffected during the construction period. Additionally, grassland and shrub-scrub vegetation tends to be compatible with transmission lines because animals are still able to graze within the ROW. Although structure footprints and road beds would occupy land, removing areas of vegetation from grazing livestock could still maneuver around the structures and roads. Impacts on grazing and most agricultural use would be temporary, short term, and ***low***. Implementation of BMPs described in Section 3.1.4, Mitigation, also would lessen impacts on private land uses.

Long-term impacts from land use limitations would be the same as those under the North Alternative. The ROW would need to be kept clear of all structures, fire hazards, tall growing vegetation (such as trees) and any other use that may interfere with the safe operation or maintenance of the transmission line. Use of the ROW for low growing crops less than 4 feet would be reviewed by BPA to determine whether the use is safe, if there is adequate clearance under the conductor, and whether the use creates interference with the operation and maintenance of the transmission facilities. If the use is compatible, a written agreement could be entered into between BPA and the landowner. Agricultural operations such as the use of irrigation pipes would not be restricted if the pipes are not raised higher than 14 feet above the ground within the ROW. Other land use restrictions discussed above for the North Alternative would also apply to the South Alternative.

The same 6.8 acres of farmland would be changed it to a utility use for the proposed Hooper Springs Substation Removing this small amount of acreage from production would have a long-term, ***low*** impact as with the North Alternative.

During operation and maintenance of the South Alternative, impacts on private land uses would be the same as under the North Alternative (short term and ***low***).

State and Federal Lands

Similar to the North Alternative, the South Alternative would likely not result in an adverse impact on state or federal land uses or overall land use patterns. Areas without structures would continue to be used for existing uses that are compatible with the transmission line corridor, such as grazing, recreation, and public access. In areas used for agriculture and grazing construction of the proposed transmission line would result in both short- and long-term, ***low*** impacts similar to those described for private lands.

In forested areas, construction of the South Alternative also would require removal of all trees within the ROW and access roads, as well as danger trees adjacent to the ROW permanently converting the land to non-forested areas. Approximately 2.7 miles of transmission line ROW and 3 miles of access roads cross C-TNF lands managed for timber harvest near the east end of the corridor. As discussed under the North Alternative, the 2003 CNF RFP described these areas as substantially modified by roads, grazing and timber harvest. The South Alternative also would result in the permanent removal of approximately 4.4 acres of forest vegetation for access road construction and placement of structures, and the conversion of approximately 48.9 acres to non-forested vegetation for ROW and placement of structures (see Section 3.4, Vegetation). Similar to the North Alternative, because of the relatively small amount of forested acreage impacted compared to the quantity of forested areas on adjacent C-TNF lands, long-term impacts on land uses would be ***low*** to ***moderate*.**

However, as with the North Alternative, because C-TNF forested lands would be converted to a utility use, the South Alternative would not be consistent with the three management prescriptions it crosses, described above. An amendment to the 2003 CNF RFP and compliance with associated standards and guidelines for Concentrated Development Areas described above for the North Alternative would be necessary (see Appendix A: CNF RFP Amendment).

The South Alternative would cross Highway 34 in one location just west of Conda. Construction activities in this area could affect recreational use by travelers although the impact would be short term and ***low*** because views would be short in duration (see Section 3.3 Visual Resources). Similar to the North Alternative, placement of the line across Highway 34 would not be consistent with the Pioneer Historic Byway Corridor Management Plan although the transmission line would be sited to blend in with the background to the extent possible. Where the transmission line would cross Highway 34, structures would be in the foreground and obvious to motorists. However, as the line moves away from the highway, it would partially or completely obscured by topography similar to the North Alternative resulting in a ***low***, long-term impact on byway and recreational use by travelers.

Mining Areas

The South Alternative corridor and associated access roads would cross past or potential future mining areas associated with the Conda/Woodall Mountain Mine, Blackfoot Bridge Mine, Wooley Valley Mine, and North Maybe Mine. In areas of past mining disturbance that are currently engaged in reclamation activities, the construction of the transmission line would disrupt activities during active road construction and tower installation. It would also potentially limit the types of activities that could occur within the corridor due to safety and reliability issues related to the transmission line. However, impacts on reclamation activities associated with past mining activities would likely be short term (lasting only during construction) and ***low***.

The South Alternative would also cross portions of the Blackfoot Bridge Mine and the Husky-North Dry Ridge Mine, which are both proposed for mining. The siting and operation of the transmission line could limit proposed mining operations as mining would likely not be allowed within the transmission line corridor or access roads due to safety, accessibility, and reliability issues. The lack of mining in the corridor or access road areas would have ***low*** to ***moderate*** long-term impacts on mining in these areas, though there are still large areas that would be unaffected and the loss of use would depend on the value of the phosphate that would no longer be accessible.

South Alternative Route Options

Options 1 through 4

Impacts on land uses under Options 1 and 2 would be the same as those discussed for the South Alternative because these options would cross generally the same private, state, and federal lands. Accordingly, land use impacts for these two options would be short term and ***low*** during construction and ***low*** to ***moderate*** where forested lands are crossed.

Construction of the western portions of Options 3 and 4 would occur in private agricultural lands west of Highway 34. As with the North Alternative, construction of the transmission line and access roads, staging areas, and conductor pulling sites, would result in temporary disruption of existing agricultural and grazing uses. These short-term disruptions, resulting from ground disturbance and the presence of equipment, would be localized to areas of active construction. Additionally, a large portion of vegetation within the ROW would remain unaffected during and after the construction period (impacts would be ***low*** and short term). Implementation of BMPs described in Section 3.1.4, Mitigation also would lessen impacts on agricultural land uses.

Impacts on mining for Options 1 through 4 would be similar to those described for the South Alternative. However, Option 3 would avoid both the Blackfoot Bridge Mine and the Conda/Woodall Mountain Mine, while Option 4 would avoid only the Conda/Woodall Mountain Mine. Impacts on mining from the route options would be expected to be short term and ***low*** for areas of active reclamation and long term, ***low*** to ***moderate*** for proposed future mining.

3.1.4 Mitigation

The following mitigation measures have been identified to reduce or eliminate land use impacts from the Project.

Plan and conduct construction activities to minimize temporary disturbance, displacement of crops, and interference with agricultural activities.

- Install barriers, gates, and postings at appropriate access points and, at the landowner’s request, to minimize or eliminate public access to project facilities.
- Limit ground-disturbing activities to structure sites, access roads, staging areas, and the proposed substation site. As needed, stake or flag water resources, wetlands, or other sensitive areas prior to construction to avoid impacts.
- Restrict public access to permanent access roads to reduce increased human impacts and to maximize big game use of the project corridor.
- Develop the Project in compliance with applicable state and federal resource management standards set forth in the appropriate management plans.

- Consult with the Farm Service Agency to avoid and mitigate impacts to lands enrolled in the USDA CRP. Avoid access road construction over CRP lands to the extent practical.
- Coordinate with mine owners along the South Alternative for the placement of towers and roads within proposed mining areas.
- Use BMPs to limit erosion and the spread of noxious weeds (see Section 3.4.4, Vegetation).
- Decommission temporary roads according to the requirements and BMPs of the appropriate land management agency or landowner (see Section 3.4.4, Vegetation).
- Restore compacted cropland soils as close as possible to pre-construction conditions using tillage (see Section 3.5.4, Geology and Soils).
- Separate topsoil in croplands (see Section 3.5.4, Geology and Soils).
- Compensate landowners for damage to property or crops, as appropriate (see Section 3.10.4, Socioeconomics).
- Compensate landowners for reconfiguration of irrigation systems due to placement of project facilities (see Section 3.10.4, Socioeconomics).
- Compensate landowners at fair market value for any new land rights acquired for ROW or access road easements (see Section 3.10.4, Socioeconomics).
- Provide a schedule of construction activities to all landowners who could be affected by construction (see Section 3.12.4, Noise).

3.1.5 Unavoidable Impacts Remaining After Mitigation

Unavoidable short-term impacts on land use under both the North and South alternatives would include disruption of existing farming and grazing activities along the ROW, access roads, conductor pulling sites, and staging areas during construction. Unavoidable long-term impacts on land use under both alternatives would include: the permanent removal of agricultural lands from production as a result of transmission structure and the Hooper Springs Substation construction; and the restriction of incompatible land uses within the transmission line ROW. Both alternatives also would unavoidably convert forested lands to non-forested vegetation, although in differing amounts. Under the North Alternative, approximately 98.5 acres of ROW would be converted to non-forested vegetation, including 24 acres of C-TNF land managed for timber harvest on the North Alternative. Under the South Alternative, approximately 98.3 acres of ROW would be converted from forest to non-forested vegetation, including approximately 32.7 acres of C-TNF land managed for timber harvest. As described above, an amendment to the 2003 CNF RFP would be necessary to establish the transmission line ROW as a utility corridor rather than -forest lands.

3.1.6 No Action Alternative

Under the No Action Alternative, the Project would not be built so land use impacts related to construction, operation, and maintenance of the transmission lines would not occur.

3.2 Recreation

3.2.1 Affected Environment

Private and State Lands

Recreational opportunities in the project area on private and state lands include hunting, fishing, boating, hiking, OHV use, and camping.

Hunting with the appropriate hunting license is allowed within the project area on public lands or where allowed by private landowners, as Units 72 and 76 of the Idaho Fish and Game Hunt Areas are found within the area. Within these units, mule deer (*Odocoileus hemionus*), elk (*Cervus canadensis*), black bear (*Ursus americanus*), mountain lion (*Puma concolor*), antlered and antlerless moose (*Alces alces*), gray wolf (*Canis lupus*), American badger (*Taxidea taxus*), and red fox (*Vulpes vulpes*) may be hunted within their respective seasons (IDFG 2011d).

Recreational fishing occurs within the project area along the Blackfoot River and at the18,000 acre Blackfoot Reservoir. Rainbow trout (*Oncorhynchus mykiss*), cutthroat trout (*Oncorhynchus clarkii*), and yellow perch (*Perca flavescens*) are all found in the Blackfoot Reservoir. Additionally, boat ramps, docks, toilets, camping, and Americans with Disabilities Act-accessible areas are all found at the reservoir (IDFG 2011e). The Blackfoot River also supports a popular cutthroat trout fishery open to fishing from July 1 to November 30.

The Blackfoot River Wildlife Management Area (WMA), managed by the Idaho Department of Fish and Game (IDFG), is located within the project area about 18 miles northeast of Soda Springs. The WMA was established to provide public access, to improve cutthroat trout habitat and provide diverse upland and riparian communities for game and non-game wildlife species. Activities in the WMA include fishing, hiking, photography, sightseeing, horseback riding, and cross-country skiing.

Hiking and OHV trail opportunities are spread throughout the project area. There is one established non-federal camping area—Cedar Bay Marina and RV Park. The Cedar Bay Marina requires a $16 entrance fee and includes the amenities of a dump station, full recreational vehicle (RV) hookups, Americans with Disabilities access, liquefied petroleum gas, and showers (Pioneer County Travel Council 2011).

Forest Service Lands

The corridor for the North Alternative crosses approximately 5 miles of the Soda Springs Ranger District of the C-TNF and the South Alternative corridor crosses approximately 3.6 miles of the District. Recreational activities on the C-TNF include dispersed camping, fishing, hunting, hiking, wildlife viewing, cross-country skiing, and OHV use—including ATVs (USFS 2010). The headwaters and approximately 5 river miles of the Blackfoot River, which provides a world class fishery, are located on the C-TNF. Two ATV trails, two campsites, and one USFS campground (Gravel Creek Campground) are located within the North Alternative corridor. ATV Trail No. 332 is a dead-end trail that passes north of Gravel Creek Campground and south of the North Alternative corridor. ATV Trail No. 333 is a dead-end trail that begins at Henry Cutoff

Road and travels northwest. Gravel Creek Campground, located approximately 0.6 mile south-southeast of the North Alternative corridor, has 12 single units open for use from May through September and has no potable water on-site (USFS 2011c).

One USFS road is located within the South Alternative corridor. USFS Road 878 is a dead-end road approximately 1.8 miles long open to all motorized vehicle traffic that travels northwest from USFS Road 309 toward the South Alternative corridor. The South Alternative would cross USFS Road 878 near its eastern terminus at the existing LVE transmission line. USFS Road 309 is a dead-end road open to all motorized traffic, roughly 0.75-mile long, beginning at Diamond Creek Road. Three ATV trails (Trails 140, 141, and 142), form a roughly 2-mile network of dead end trails extending westward and southward from the end of USFS Road 309. USFS Road 309 and ATV Trails 140, 141, and 142 are located approximately 1 mile south-southeast of the South Alternative corridor. Mill Canyon Campground is located approximately 1 mile north of the South Alternative corridor. Mill Canyon Campground has 10 single units open from May through September and has no potable water on site (USFS 2011c).

USFS lands crossed by portions of the North and South alternative corridors within the Soda Springs Ranger District are managed pursuant to the 2003 CNF RFP. The 2003 CNF RFP includes forest-wide goals, objectives, and standards and guidelines for recreation. The goals relate to providing developed and dispersed recreational facilities, access, and programs; meeting federal, state, and local standards for health and safety; providing barrier-free facilities and services; providing recreational information in a variety of media and locations; and providing environmental education and interpretation (USFS 2003a).

The corridor for the North Alternative crosses seven Management Prescriptions within the C-TNF: 2.1.2, Visual Quality Maintenance; 2.7.1, Elk and Deer Winter Range Critical; 2.7.2, Elk and Deer Winter Range; 5.2, Forest Vegetation Management; 3.2b, Semi-Primitive Recreation; 2.1.6b, Gravel Creek Special Emphasis Area, and 2.8.3, AIZ. The corridor for the South Alternative crosses three management prescriptions: 2.7.2, Elk and Deer Winter Range; 5.2, Forest Vegetation Management; and 2.8.3, AIZ. There are stated management goals related to recreation for each management prescription (USFS 2003a). Recreational uses and management goals within each prescription are described in Table 3-9. Category 4 Management Prescriptions guide the management of ecological values to provide for human recreational uses, such as developed and dispersed recreational areas. None of the C-TNF lands in the North Alternative and South Alternative corridors are managed under Category 4 Management Prescriptions.

The USFS has used the Recreation Opportunity Spectrum (ROS) since the 1980s as a management tool to describe and allocate outdoor recreational settings. ROS is a tool used to support definition and management of diverse outdoor recreational opportunities. It is based on the assumption that, because of diverse public tastes, quality in outdoor recreation is best assured through provision of a broad set of recreational opportunities. The North and South alternative corridors cross C-TNF lands identified as Roaded Modified ROS class (USFS 2003a). The Roaded Modified ROS class can generally be described as areas that have been heavily modified by roads or recreational facilities, where motor vehicle use is permitted and facilities for this use are provided, but resource conditions still offer opportunities for a high degree of interaction with the natural environment. The South Alternative also crosses C-TNF lands identified as a Semi-Primitive Motorized ROS class, which can generally be described as characterized by a predominantly natural or natural-appearing environment with a moderate probability of experiencing isolation from the sights and sounds of man, but with motorized uses present.

Table 3-9. Recreational Uses and Goals by Management Prescription

Management Prescription	Recreational Uses and/or Goals
2.1.2: Visual Quality Maintenance	Non-motorized activities, such as hiking, biking, or horseback riding, may originate from trail or road points along the main road. Some roads and nearby areas are available for year-round snowmobile, motorcycle, and 4-wheel drive vehicle use.
2.7.1: Elk and Deer Winter Range Critical	Access is managed or restricted to provide security for wintering elk and deer. Summer and winter motorized travel is restricted to designated roads and trails. Livestock grazing, timber management, recreation, and other resource management activities can occur as long as desired vegetation and security conditions are being maintained.
2.7.2: Elk and Deer Winter Range	Access is managed or restricted to provide security for wintering elk and deer. Winter and summer motorized travel is restricted to designated roads and trails. Livestock grazing, timber management, recreation, and other resource management activities can occur as long as desired vegetation range conditions are being maintained.
5.2: Forest Vegetation Management	Recreation site development may be limited to the degree it is compatible with achieving desired conditions. Overall, visitors will notice many signs of people. A road system and logging activity occur in these areas. The main road system is gravel surfaced and maintained with gentle grade. Visitors may see logging equipment on roadsides and meet logging traffic along the roadway. Road densities and design are compatible with multiple resource values, including watershed, fish, wildlife, and recreation. Motorized use is prevalent, both for timber management activities and recreation.
3.2b: Semi-Primitive Recreation	This management prescription identifies areas with a semi-primitive, backcountry recreational experience, associated with some motorized vehicle use. These areas are accessible by roads and trails, designed and maintained to allow easy passage. Visitors will find occasional to frequent encounters with trail users. Visitors may also meet large groups occasionally. Domestic livestock grazing may be present in some areas, and visitors may see range improvements, such as fencing and stock tanks. These areas are removed from the suitable timber base, but salvage harvest and commercial post and pole sales are allowed provided any new road construction is limited to temporary roads.
2.1.6b: Gravel Creek Special Emphasis Area	This management prescription applies to a 160-acre parcel of land that was donated to the Forest Service as mitigation for wetland impacts from highway reconstruction on U.S. 89. Management is focused on maintaining the wetland characteristics of the area. Mineral development and livestock grazing are prohibited. Timber harvest can occur for such things as public safety, visual quality, fuel reduction, long-term sustainability of ecosystem components. There are no specific recreation goals or objectives for this prescription, although motorized travel is prohibited except in winter months.

Management Prescription	Recreational Uses and/or Goals
6.2 Rangeland Vegetation Management (North Highland Option Only)	The purpose of this management prescription is to achieve and maintain healthy rangelands for livestock forage production and watershed conditions. This management prescription is designed to maintain rangeland ecosystem processes and functions and does not state any specific recreational goals or objectives. Roads, trails, and stock facilities exist; herders, range riders, camps, and transport vehicles may be seen at various times and places; and dispersed recreation activity occurs throughout these areas.
2.8.3 AIZ	This management prescription applies to areas associated with lakes, reservoirs, ponds, perennial and intermittent streams, and wetlands, which control hydrologic, geomorphic, and ecological processes and directly affect water quality and aquatic life. Management emphasis is to restore and maintain the health of these areas. Standards and guidelines for recreation stipulate that design, construction, and operation of facilities, including trails and campsites, take place in a manner that minimizes adverse impacts and maintains progress toward desired AIZ attributes.

Source: USFS 2003a

Bureau of Land Management Lands

The northern portion of the North Alternative corridor crosses a portion of one BLM-owned parcel totaling 0.5 mile, located adjacent to C-TNF. Recreational opportunities on BLM lands surrounding the North Alternative include camping, hiking, picnicking, boating, hunting, fishing, and caving. The South Alternative corridor crosses three BLM parcels totaling about 2.7 miles. One parcel is located near Conda directly adjacent to mining areas. The second BLM parcel and is located along Blackfoot River Road approximately 3.5 miles northeast of the Conda/Woodall Mountain Mine, between line miles 13 and 14.The third BLM parcel is located near the Blackfoot River Narrows adjacent to C-TNF lands. Recreational opportunities on BLM lands surrounding the South Alternative are similar to those found on BLM land along the North Alternative, and include opportunities for dispersed recreation such as hunting, camping, or ATV use (Patterson 2012, personal communication).

BLM lands west of the middle portion of the North Alternative corridor are part of the Blackfoot River Special Recreation Management Area (SRMA), which includes 14,720 acres of public lands along the Blackfoot River and Blackfoot Reservoir. However, BLM parcels crossed by the North and South alternatives are not part of the SRMA. The main recreational and visitor use areas in the Blackfoot River SRMA are the Blackfoot River and Reservoir. Associated activities in this area include camping, fishing, boating, and bird watching. The Blackfoot Reservoir is 18,000 surface acres when full and is the second largest reservoir in southeastern Idaho. Blackfoot Reservoir Campground at the Blackfoot Reservoir, which is managed by BLM, is outside of the North and South alternative corridors, but less than 3 miles from the North Alternative corridor. Access to the campground requires users to traverse the project corridor. During a BLM visitor use study conducted between October 1, 2002, and September 30, 2003, the Blackfoot Reservoir Campground had 7,000 visits and 11,734 visitor days. This comprises approximately 3 percent of the total visitor days to all SRMAs within the Pocatello Field Office area during this time (BLM 2004).

The BLM parcels crossed by the alternative corridors are managed pursuant to the 1988 Pocatello RMP. The Pocatello RMP contains management goals and objectives for recreation related to managing lands for a variety of non-motorized and motorized opportunities. BLM's management goals include continuing to provide for recreational opportunities on and access to public lands while taking into consideration the result of management actions on the economies of communities within the region. Management goals also include ensuring that recreational facility development and activities are consistent with the other resource goals for the area and recognizing recreation as the principal use on public land within SRMAs (BLM 1988).

The ROS is also used by BLM to characterize lands in terms of the types of recreational experiences, activities, and settings that are provided. No formal ROS classifications have been recorded in previous planning documents (BLM 1988), and no ROS maps indicating land classification are included in the Pocatello RMP.

Bureau of Indian Affairs Lands

BIA operates the Blackfoot Reservoir to irrigate lands on the Fort Hall Indian Reservation and surrounding vicinity, but does not manage recreational access or activities on the reservoir. The North Alternative corridor crosses 1.7 miles of lands managed by BIA for the Fort Hall Irrigation Project east of the Blackfoot Reservoir. BIA does not have recreation management goals or objectives for its lands within the area. As most of these lands are leased for cattle grazing, recreational opportunities on BIA lands in the North Alternative corridor are limited. The South Alternative does not cross BIA-managed lands.

Alternative Route Options

North Alternative Route Options

The Long Valley Road Option crosses land primarily in agricultural use. As discussed above, other recreational opportunities on private lands surrounding the project corridor include hunting, fishing, boating, hiking, OHV use, and camping.

The North Highland Option crosses forested private land as well as C-TNF lands managed under prescriptions 3.2 Semi-Primitive Recreation, 2.1.2 Visual Quality Maintenance, and 6.2, Rangeland Vegetation Management,, and included within the Roaded Modified ROS class.

South Alternative Route Options

Because the corridors for Options 1 and 2 cross generally the same private, state, and federal lands as the South Alternative, recreational activities are the same. About 9.7 miles of Option 3 crosses private agricultural lands west of Highway 34 where recreational activities might include hunting. Option 4 crosses about 5.5 miles of these same private agricultural lands west of Highway 34 before turning east to rejoin the South Alternative. Recreational activities on the remaining portions of Options 3 and 4 are the same as those described for the South Alternative and Options 1 and 2.

3.2.2 Environmental Consequences of the North Alternative

Private and State Lands

Most of the lands crossed by the North Alternative are privately owned with one state of Idaho parcel east of the Blackfoot Reservoir. Possible impacts on recreational users on private or state lands would include noise from construction, construction vehicles, equipment and workers, dust from construction activities, wildlife disruption, construction of the Hooper Springs Substation, and closure of areas within the ROW for safety reasons during construction.

The only privately owned developed recreational facility within 1 mile of the proposed North Alternative route is the Cedar Bay Marina and RV Park, located on the Blackfoot Reservoir approximately a quarter mile from the proposed ROW/Highway 34 crossing in Henry, Idaho. In addition to potential construction impacts as described for recreational use above, short-term impacts on Highway 34 use would include traffic congestion and intermittent road closures associated with placement of structures and stringing of the transmission line across the highway. Overall, short-term impacts of the North Alternative to recreational opportunities and facilities on non-federal lands would be ***low*** to ***moderate***.

The presence of the cleared ROW and access roads would not be expected to cause a noticeable change in recreational access or use on private and state lands in the long term; impacts of the North Alternative on these recreational opportunities are expected to be ***low***.

Impacts on recreation from operation and maintenance of the North Alternative are expected to be short term and intermittent. Twice each year, helicopter flyovers would cause temporary noise that could disturb recreational users. Noise associated with maintenance vehicle trips as necessary would also be temporary, but less frequent. Long-term impacts from operation and maintenance of the North Alternative would be ***low***.

Forest Service Lands

Noise, dust, and traffic associated with construction of the North Alternative could directly affect two recreational trails, two campsites, and one USFS campground (Gravel Creek Campground), which are located within the alternative corridor. The proposed transmission line ROW also would cross ATV Trail No. 333 in two locations. Recreational use of this trail could be affected during construction by trail closure due to safety and security concerns.

Direct impacts on recreational use would include noise from construction activities and equipment, construction vehicle traffic, the presence of construction workers, dust from construction activities, and wildlife disruption. The impacts on recreational use on USFS land would be minimized because the majority of the proposed transmission line would be near the boundaries of C-TNF or would be close to existing roads so that recreational use deeper within C-TNF would remain unaffected. It is expected that recreational users in the areas near the boundaries of C-TNF or near roads would be less likely to be seeking a remote, undisturbed experience during their visits, compared to those who are recreating in more remote areas within C-TNF boundaries. The ROS crossed by the North Alternative is Roaded Modified, which indicates these areas are known to have a higher level of human activity than a less developed ROS, such as Primitive. In addition, six of the seven Management Prescriptions crossed by the

North Alternative allow for motorized activities and road development. As a result, it is expected that short-term construction-related impacts of the North Alternative on recreational use in the C-TNF would be ***low***.

Vegetation clearing for construction of the North Alternative would disturb land that was in some cases previously undeveloped and forested. As discussed above, the areas of C-TNF that the North Alternative crosses are not managed for primitive or remote recreation. Although the cleared ROW and access roads would be detectable to users in the area, the recreational uses would remain unchanged and capacity would remain the same. In addition, only a small portion of C-TNF would be impacted for users in close proximity to the proposed ROW. The presence of the cleared ROW, transmission line, and access roads would therefore have a long-term, ***low*** impact on dispersed recreation.

Lands, roads, and facilities in close proximity to the proposed transmission line may be temporarily closed to users during construction for safety and security reasons. Indirect impacts on recreational facilities would include the use of USFS roads by construction vehicles and workers during construction. Construction of the proposed transmission line could result in temporary traffic delays, road closures, and diminished access to nearby recreational areas. Following any construction-related closures, access to recreational facilities and roads would return to normal. Impacts associated with construction would be expected to occur during approximately 16 months of the 2-year construction period. Overall, short-term impacts on recreational facilities on C-TNF lands from construction of the North Alternative would be ***low*** to ***moderate***.

New access roads could result in an increase in unauthorized OHV use, because they would create new access points. Potential for unauthorized OHV access would be minimized with the installation of gates constructed at all project-related roads, which would be adequately sited and designed to prevent OHV access. As a result, occurrences of unauthorized public access and OHV uses would be infrequent and respective impacts are expected to be ***low***.

Impacts from operation and maintenance of the North Alternative would be from the presence of helicopters and maintenance equipment and associated noise. About twice annually, a helicopter would fly the transmission lines to look for any problems or repair needs. When and if maintenance needs arise, field vehicles would be used to access trouble spots along the ROW. Operation of the proposed transmission line would result in minimal foul weather-generated corona noise at the edge of the ROW that would be audible to recreational users in immediate proximity to the transmission line. See Section 3.12, Noise, for further discussion. Impacts on recreation from operation and maintenance of the North Alternative are expected to be intermittent and ***low***.

Bureau of Land Management Lands

The North Alternative corridor crosses one BLM parcel not located within the Blackfoot River SRMA. Additionally, there are no developed BLM recreational facilities in close proximity to the North Alternative. The direct and indirect impacts from construction of the North Alternative on recreational use on BLM lands would be similar to those described for USFS land above, including construction noise, dust, traffic, and temporary area closures. Overall, short-term impacts on recreation from construction of the North Alternative would be ***low***

The presence of the cleared ROW and access roads would not be expected to cause a noticeable change in recreational use on BLM lands, and would also not limit user access to BLM recreational facilities. Within the SRMA, users of Blackfoot Reservoir Campground would be able to see the proposed transmission line in the distance; however, as discussed later in Section 3.3, Visual Resources, it is unlikely the transmission line would be a dominant feature in the landscape, due to the almost 4-mile distance from the campground. The long-term impacts of the North Alternative on recreational use of BLM lands and facilities would therefore be ***low.*** Impacts from operation and maintenance of the proposed transmission line would be attributable to the presence of helicopters and maintenance equipment and associated noise. Similar to the impacts described for USFS land above, the impacts on recreation from operation and maintenance of the transmission line are expected to be intermittent and ***low***.

Bureau of Indian Affairs Lands

Recreational users of the Blackfoot Reservoir would be able to see the proposed transmission line in the distance from certain areas of the reservoir; however, the visual impacts on these users would be similar to those described in Section 3.3, Visual Resources, and for Blackfoot Reservoir Campground above. The North Alternative would also not limit existing user access to the reservoir. The 1.7 miles of BIA lands crossed by the Project are not governed by any recreation management goals or objectives, and are predominantly leased for cattle grazing. Since there is no known recreational use of these lands, the North Alternative would have ***no*** impact on recreation on lands managed by BIA.

North Alternative Route Options

The areas of private land impacted under the Long Valley Road Option are currently in active grazing and crop cultivation and are not known to experience high levels of recreational use. Although the Long Valley Road Option would increase the area of private land potentially impacted by transmission line ROW and access roads by up to 78 acres, this option would not result in a substantial change to the overall recreational impacts of the North Alternative on private lands as described above. The overall short-term impacts of the Long Valley Road Option on recreational use and facilities during construction would be similar to those described above. In the long term, the impacts from the presence of the transmission line ROW and from operation and maintenance of the transmission lines would also be ***low.***

The areas of private land under the North Highland Option are currently forested where hunting or hiking may occur. This option would require clearing for ROW and roads which could impact these recreational activities. However, a relatively small amount of land would be cleared on private land (about 4.8 acres) resulting in a ***low*** impact on hunting and hiking. Short-term impacts of the North Highland Option on recreational use and during construction would the same as those described for the North Alternative.

Most of the North Highland Option would be on C-TNF land managed as 3.2, Semi-primitive Recreation, 2.1.2, Visual Quality Maintenance, and 6.2, Rangeland Vegetation Management, and included in the Roaded Modified ROS class, similar to the North Alternative as described above.

Short- and long-term impacts on recreational use on the C-TNF under this routing option would be similar to those described for the North Alternative (***low***).

3.2.3 Environmental Consequences of the South Alternative

Private and State Lands

As with the North Alternative, most of the lands crossed by the South Alternative are privately owned. There is one state of Idaho parcel in the middle portion of the South Alternative. Possible impacts on recreational users on private or state lands would be the same as described under the North Alternative; noise from construction vehicles, equipment and workers, dust from construction activities, Hooper Springs Substation construction, and closure of areas within the ROW for safety reasons during construction would occur. In addition to potential construction impacts on recreational use, the same short-term impacts on Highway 34 use would occur. Overall, short-term impacts of the South Alternative would be the same as impacts from the North Alternative; ***low*** to ***moderate***.

The presence of the cleared ROW and access roads would not be expected to cause a noticeable change in recreational access or use on private or state lands in the long term; impacts would be ***low***.

Impacts from operation and maintenance of the South Alternative are expected to be short term and intermittent similar to the North Alternative. Helicopter flyovers and vehicle trips would cause temporary noise that could disturb recreational users twice a year. Long-term impacts from operation and maintenance of the South Alternative would be ***low***.

Forest Service Lands

Noise, associated with construction of the Project could impact one USFS campground, which is located 1 mile north of the South Alternative corridor. The proposed transmission line ROW also would cross USFS Road 878. Recreational use of this road could be affected during construction by road closures due to safety and security concerns.

Potential direct impacts on recreational facilities would be similar in nature to those described under the North Alternative on C-TNF lands: noise disturbance and dust from construction activities and equipment, construction vehicle traffic, presence of construction workers, and wildlife disruption. However, the level of these impacts would be lower under the South Alternative, as only one campground lies within 1 mile of the South Alternative corridor. Additionally, lands, roads, and facilities close to the South Alternative corridor including near the Blackfoot River Narrows area may be temporarily closed to users for safety and security reasons and temporary traffic delays and diminished access to nearby recreational areas could occur. However, recreational users along the Blackfoot River would be less likely to be seeking a remote, undisturbed experience because the Blackfoot River is bordered by Blackfoot River Road in this area. Following any construction-related closures during the 2-year construction period, access to recreational facilities and roads would return to normal. Overall, short-term impacts on recreation on C-TNF lands from construction of the South Alternative would be ***low*** to ***moderate***.

The two ROS classes crossed by the South Alternative are Roaded Modified and Semi-Primitive Motorized, which indicates these areas are known to have a higher level of human activity than a less developed ROS, such as Primitive. In addition, six of the seven Management Prescriptions crossed by the South Alternative allow for motorized activities and road development. As a result, it is expected that short-term construction-related impacts of the South Alternative on recreational use in the C-TNF would be ***low***.

Similar to the North Alternative, vegetation clearing for construction of the South Alternative would disturb land that was in some cases previously undeveloped and forested. As discussed above, the areas of C-TNF that the South Alternative crosses are not managed for primitive or remote recreation. Although the cleared ROW and access roads would be detectable to users in the area, the recreational uses would remain unchanged and capacity would remain the same. In addition, only a small portion of C-TNF would be impacted for users in close proximity to the proposed ROW. The presence of the cleared ROW, transmission line, and access roads would therefore have a long-term, ***low*** impact on dispersed recreation.

Similar to the North Alternative, new access roads could result in an increase in unauthorized OHV use. Gate installation would minimize potential for unauthorized OHV access resulting in a ***low*** impact from unauthorized public access and OHV use.

Impacts from operation and maintenance of the South Alternative would be the same as the North Alternative (intermittent and ***low***).

Bureau of Land Management Lands

There would be no impact on the BLM parcel crossed by the South Alternative corridor near Conda because there are no developed BLM recreational facilities on this parcel. Impacts on the BLM parcel located along Blackfoot River Road between line miles 13 and 14 and the BLM parcel adjacent to the Blackfoot River Narrows and C-TNF lands would be the same as those described for recreational use impacts from the North Alternative; short term and ***low***.

The presence of the cleared ROW and access roads under the South Alternative would result in the same impact as from the North Alternative (***low*)**. Impacts on BLM lands from operation and maintenance of the South Alternative would be the same as described above for the North Alternative; intermittent and ***low***.

Bureau of Indian Affairs Lands

There would be ***no*** impact on BIA lands because the South Alternative corridor does not cross any of these lands

South Alternative Route Options

Options 1 and 2 would have the same impacts on recreational uses as the South Alternative (***low*** to ***moderate*** on private, state and C-TNF lands and ***low*** on BLM lands). Option 3 and 4 would have ***no*** impacts on recreational uses where the routes cross private agricultural lands west of Highway 34 and the same impacts as above where the routes follow the same path as Options 1 and 2 and the South Alternative.

3.2.4 Mitigation

The following mitigation measures have been identified to reduce or eliminate recreation impacts from the Project.

- Install barriers, gates, and postings at appropriate access points to minimize or eliminate public access to project facilities (see Section 3.1.4, Land Use).
- Provide a schedule of construction activities to all landowners who could be affected by construction (see Section 3.12.4, Noise).

3.2.5 Unavoidable Impacts Remaining after Mitigation

Potential unavoidable short-term impacts on recreation include disruption from noise and dust associated with construction vehicles and equipment. Long-term impacts on recreational use would also result from the presence of the proposed transmission lines and permanent access roads. Construction of the transmission lines, including access roads and pulling sites, and the associated clearing of vegetation would disturb some lands that were previously forested and undeveloped, and operation and maintenance of the ROW and permanent access roads would maintain these lands in a developed condition. Users seeking a remote and secluded outdoor recreational experience would experience the diminishment of this type of recreational opportunity in and within site of the transmission line ROWs or within hearing distance of maintenance activities.

3.2.6 No Action Alternative

Under the No Action Alternative, the Project would not be built, so impacts on recreation related to the construction, operation, and maintenance of the transmission lines would not occur.

3.3 Visual Resources

3.3.1 Affected Environment

The project area is characterized by north to south trending valleys bordered by rolling hills and steep mountain ranges. Sagebrush or grass-covered foothills parallel broad valleys south and east of the Blackfoot Reservoir in the southern and middle portions of the Project. Steep mountain ridges with forested slopes flank the rolling hills and small valleys in the northern and eastern portions of the project area.

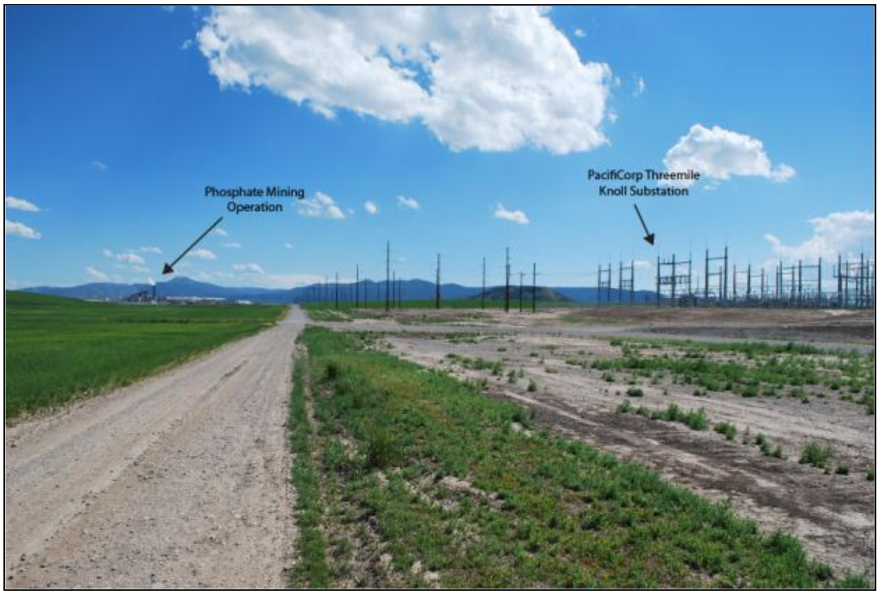
The project area is sparsely populated with residential development limited to rural homes, ranches, and farms scattered along the North Alternative corridor and the western portion of the South Alternative corridor. Mine development also is present along the middle portion of the North Alternative corridor, as well as along much of the South Alternative corridor. The Pioneer Historic Byway (Highway 34) runs along the majority of the North Alternative corridor and to the west of the South Alternative corridor (see Map 3-6). This Historic Byway is an Idaho state and nationally recognized scenic byway with several important points of interest including Hooper Springs, the China Hat and China Cap Geological formations, the Henry-Chester Country Store, and Gray's Lake National Wildlife Refuge.

Private and State Lands

<u>North Alternative</u>

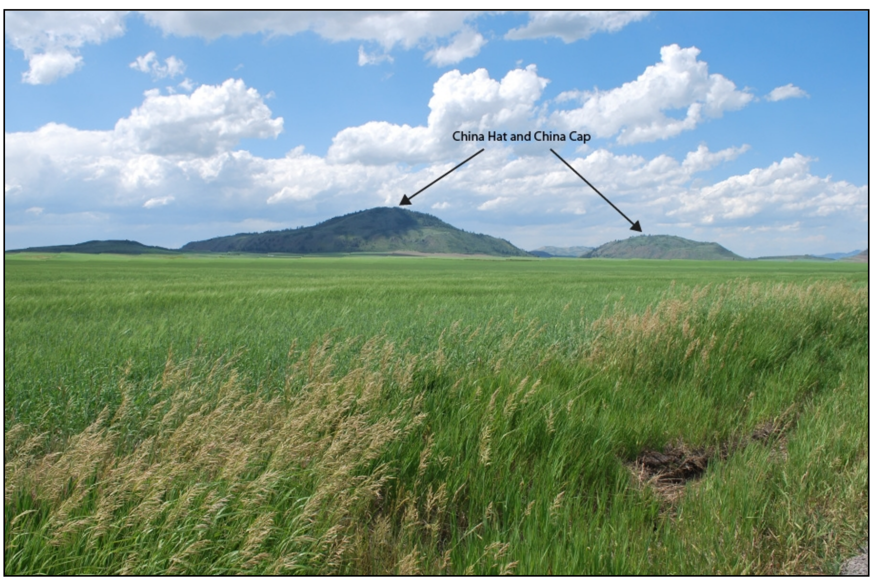
Privately-owned land is primarily located at the western and eastern ends of the North Alternative corridor, with one state-owned parcel located between transmission line miles 11 and 15 (see Map 3-6). Beginning at the western end of the North Alternative corridor, the Hooper Springs Substation site is in a flat, privately-owned agricultural area adjacent to the existing PacifiCorp Threemile Knoll Substation. The area has industrial components within an agricultural landscape, including the existing substation and the phosphate mining operation south of the substation (see Figure 3-1 and Appendix B). In cultivated areas near the Hooper Springs Substation site, the landscape consists of gently rolling hills in the foreground (up to 0.5 mile from the viewpoint) and middle ground (up to 4 miles from the foreground), with ridges dominating the background (4 miles and beyond to the horizon) and in the distance.

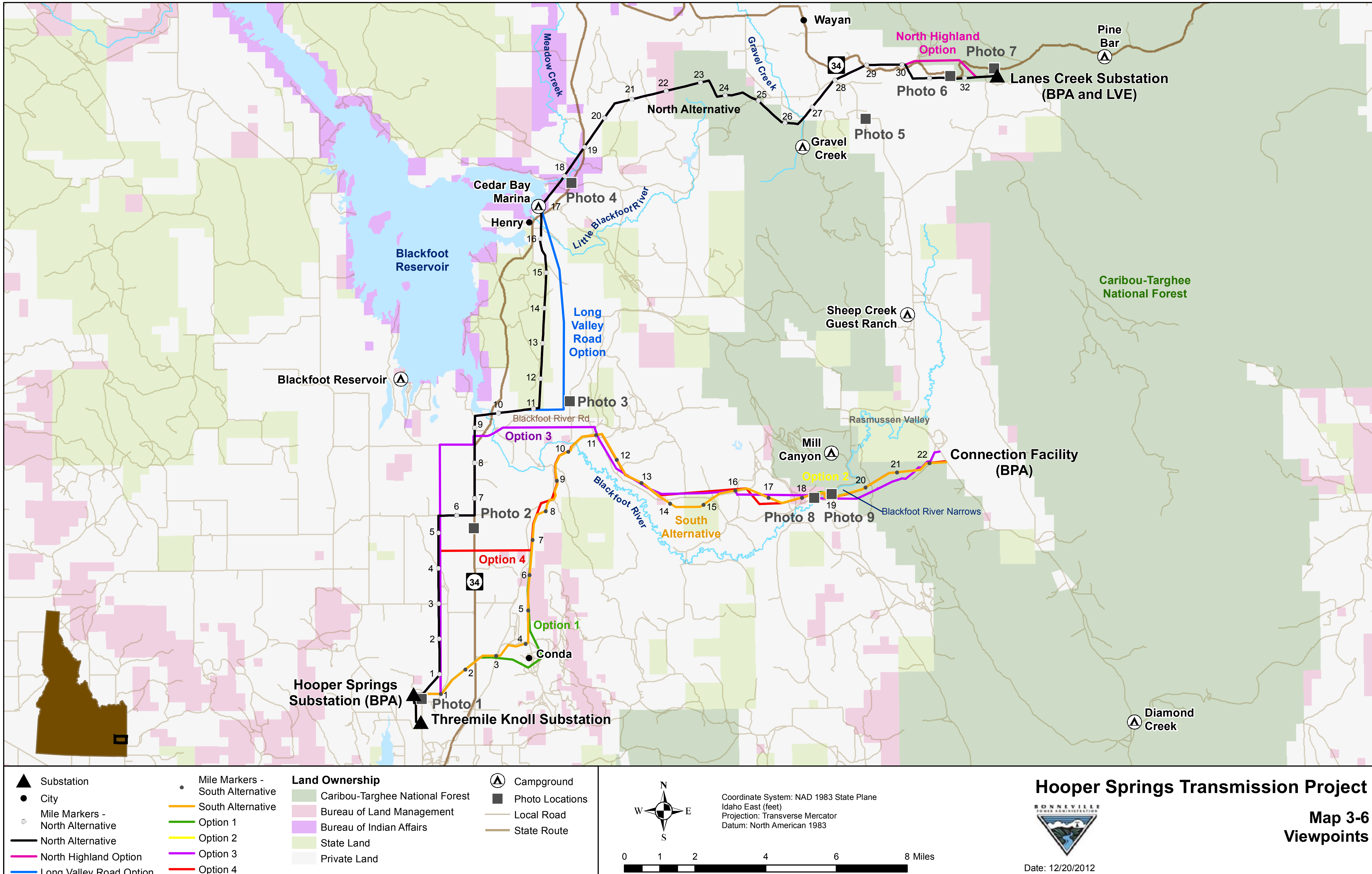
Figure 3-1. Photo 1—Vicinity of the Proposed Hooper Springs Substation



From the Hooper Springs Substation site, the North Alternative corridor (between line miles 1 and 10) crosses private agricultural and grazing lands and passes near the China Hat and China Cap geological sites, which appear in the background of the landscape (see Figure 3-2). The corridor also travels parallel to and west of Highway 34 between line miles 1 to about 6 and then adjacent to the highway from line miles 6 to 9. A relatively large number of local and non-local motorists travel on Highway 34 in this area (see Section 3.11, Transportation).

Figure 3-2. Photo 2—China Hat and China Cap





Hooper Springs Transmission Project
Map 3-6
Viewpoints
Date: 12/20/2012
Coordinate System: NAD 1983 State Plane Idaho East (feet)
Projection: Transverse Mercator
Datum: North American 1983
0 1 2 4 6 8 Miles
N
S
E
W
Substation
City
Mile Markers - North Alternative
North Alternative
North Highland Option
Long Valley Road Option
Mile Markers - South Alternative
South Alternative
Option 1
Option 2
Option 3
Option 4
Land Ownership
Caribou-Targhee National Forest
Bureau of Land Management
Bureau of Indian Affairs
State Land
Private Land
Campground
Photo Locations
Local Road
State Route
Wayan
North Highland Option
Photo 7
Pine Bar
Lanes Creek Substation (BPA and LVE)
Photo 6
Photo 5
Gravel Creek
North Alternative
Meadow Creek
Gravel Creek
Cedar Bay Marina
Photo 4
Henry
Little Blackfoot River
Blackfoot Reservoir
Long Valley Road Option
Caribou-Targhee National Forest
Sheep Creek Guest Ranch
Blackfoot Reservoir
Photo 3
Blackfoot River Rd
Option 3
Rasmussen Valley
Mill Canyon
Connection Facility (BPA)
Option 2
Blackfoot River
Photo 2
South Alternative
Photo 8
Photo 9
Blackfoot River Narrows
Option 4
Option 1
Conda
Hooper Springs Substation (BPA)
Photo 1
Threemile Knoll Substation
Diamond Creek

On state of Idaho lands between line miles 11 and 15, the North Alternative corridor crosses over ridges of the western foothills of Long Valley. State land in this area is primarily grazing lease lands with grass and sagebrush-dominated slopes. The rolling hills landscape continues as the North Alternative corridor crosses back on to private lands near line mile 15 with mountain ridges appearing in the landscape background. Private lands are then intermixed with BIA lands between line miles 16 and 22.

Private agricultural and/or grazing lands also occupy the northeast portion of the North Alternative corridor (line miles 27 to 31). There are few buildings on the landscape including scattered houses and farm outbuildings. The corridor for the North Alternative near the intersection of Highway 34 and Lanes Creek Road crosses rolling hills with sagebrush and grasslands in the fore- and middle ground, giving way to steeper ridges in the background. Evidence of human presence along this portion of Lanes Creek Road includes low fencing, wooden utility lines, and residential homes (see Figure 3-3).

Figure 3-3. Photo 3—Private Lands in the Northeast Portion of the North Alternative off Lanes Creek Road

South Alternative

The western approximately three-quarters of the entire length of the South Alternative corridor is located on privately-owned land, with one state-owned parcel crossed between line miles 14 and 15 (see Map 3-6). The Hooper Springs Substation site under the South Alternative is on the same privately-owned agricultural land as under the North Alternative (see Figure 3-1).

From the Hooper Springs Substation site across Highway 34 to Conda, the corridor for the South Alternative crosses mostly level private agricultural land with views of the mountains and foothills. East of Highway 34 in line miles 3 to 8, other human-made features in the fore to middle ground include the embankments of the Agrium Phosphate Mine settling ponds; slag and tailing piles, equipment associated with the Agrium Plant; steel and wood structures for transmission and distribution lines; Highway 34; and miscellaneous buildings. The area is highly disturbed with level to steep terrain and areas that have been scoured and contoured for construction and mining purposes. Although the public can drive along part of Conda Road, this portion of the South Alternative corridor is not viewed in the foreground by many people other than employees of the Agrium Plant. Most views by the public are from Highway 34, along Conda Road over a mile to the west, or on other unpaved roads. There are no residences along this part of the South Alternative corridor.

As the South Alternative corridor begins to curve northeastward in line mile 10, it crosses through private industrial and agricultural land and then over the Blackfoot River. Vegetation varies from forested and riparian areas, to grass and sage with areas of rangeland. The South Alternative corridor then travels east and southeast along Blackfoot River Road through private range and mining lands and a state of Idaho parcel in line mile 14 to 15 until it reaches BLM and C-TNF lands in line mile 18. There are a few residences along this portion of the corridor.

In this area the terrain varies from flat to hilly. North-facing slopes tend to be forested, while south and west facing slopes tend to contain sage and grasses. Sloped areas (particularly east-facing slopes) are generally covered with aspen. Views along this portion of the South Alternative corridor vary from open valley views to more constricted views in areas adjacent to hills. Some mining activity on hillsides north of Blackfoot River Road can be seen along this portion of the South Alternative. Local residents, travelers and fisherman use Blackfoot River Road to access the Blackfoot River, as well as C-TNF and private lands farther to the east.

Forest Service Lands

The USFS uses the Visual Management System to establish Visual Quality Objectives (VQOs) for its lands (USFS 2003b). VQOs are further defined in Appendix B. The following summarizes the relevant VQOs for portions of the project corridors located on USFS lands:

- **Retention**—Retention lands allow for management activities that are not visually evident. Activities may only repeat form, line, color, and texture that are frequently found in the character landscape.
- **Partial Retention**—Partial Retention allows for management activities that remain visually subordinate to the characteristic landscape. Activities may repeat form, line, color, and texture common to the characteristic landscape, but changes in their qualities of size, amount intensity, direction, pattern, etc., remain visually subordinate to the characteristic landscape.
- **Modification**—Modification refers to landscapes where the valued landscape character appears moderately altered and differences begin to dominate the valued landscape character being viewed.

This section identifies the USFS lands crossed by each project corridor and describes their VQO classification and existing visual conditions.

North Alternative

The North Alternative corridor crosses approximately 5 miles of C-TNF lands between line miles 22 and 27 and 31 to 32 (see Map 3-6). C-TNF lands crossed by the North Alternative corridor are classified as either Retention or Partial Retention. Topography and vegetation on C-TNF lands crossed by the North Alternative corridor consist of heavily forested north-facing slopes with mixed stands of aspen and coniferous forest. South facing slopes and open areas at lower elevations contain low-growing vegetation such as sagebrush and grasses. The landscape where the North Alternative corridor crosses C-TNF lands varies from foothills that block extended views to open valleys. Highway 34 is considered part of the scenic landscape where it crosses C-TNF lands (see Figure 3-4).

Figure 3-4. Photo 4—Highway 34 Crossing of C-TNF Lands

Approximately the first 4 miles of C-TNF lands crossed by the North Alternative corridor (line miles 22 to 26) are classified as Partial Retention. In this area, the corridor is north of the USFS Gravel Creek Campground, located off Wayan Loop Road. The campground is located off the road among high topography and heavy tree cover.

Adjacent to Highway 34 and within a broad valley, the North Alternative corridor (line mile 31) enters approximately 0.5 mile of C-TNF lands classified as Retention. The foreground is primarily meadows and sagebrush with a middle ground of moderate hills, and a background of mountain ridges. The corridor leaves the Retention portion of C-TNF lands and enters into a Partial Retention parcel for approximately 0.5 mile (line mile 32) before ending at the Lanes Creek Substation. In this area, C-TNF lands have low to moderate hilly topography with groves of low growing trees and shrubs on the hillsides. The topography is generally high and varied enough to block a direct view of the Lanes Creek Substation while driving on Highway 34 (see Figure 3-5). However, there are valleys along the highway where the landscape opens to broader views of rolling hills and meadows.

Figure 3-5. Photo 5—Lanes Creek Cutoff Road toward Lanes Creek Substation

<u>South Alternative</u>

Approximately 3.5 miles of the South Alternative corridor passes through the C-TNF between line miles 19 and 22 (see Map 3-6). C-TNF lands crossed by the South Alternative corridor are classified as either Partial Retention or Modification. Where the corridor enters the C-TNF from the west at the area known as the Narrows (see Figure 3-6), lands are classified as Partial Retention. In this area, the Blackfoot River valley narrows considerably and becomes a twisting narrow canyon that turns sharply to the north for several miles before opening up again in the Rasmussen Valley. Blackfoot River Road winds through the bottom of the canyon next to the Blackfoot River and is surrounded by canyon side-slopes that rise sharply up to several hundred feet above the road and river. Further east near where the corridor exits the C-TNF near Diamond Creek Road, the VQO is Modification.

Figure 3-6. Photo 6—Entrance to the Narrows from Blackfoot River Road

North-facing slopes on C-TNF lands crossed by the South Alternative corridor are heavily forested with mixed stands of conifers and aspen, as are some of the higher portions of most of the east-and west-facing slopes above the Narrows. South facing slopes contain vegetation such as sage and grasses. Views through the Narrows are restricted by the twisting terrain and vegetation. Mill Canyon Road turns off of Blackfoot River Road and rises approximately 0.5 mile through hillsides to the Mill Canyon Campground (see Section 3.2, Recreation). The lands adjacent to the Mill Canyon Road become forested towards its upper end.

After crossing the Blackfoot River at the start of the Narrows, the South Alternative corridor travels along the southern ridge of the river valley, east and over Dry Ridge. This portion of the corridor crosses rugged, mostly forested mountains. Views from Dry Ridge include areas several miles south that have been heavily altered through phosphate mining activities.

The eastern end of the South Alternative corridor descends the forested, east-facing slopes and canyons of Dry Ridge into Upper Valley and terminates at the base of the ridge at the existing LVE line located next to Diamond Creek Road (see Figure 3-7). Views throughout Upper Valley include the valley floor and adjacent mountains (see Figure 3-8). Viewers include primarily residents of scattered ranches and people driving on Diamond Creek Road.

Blackfoot River Road and Diamond Creek Road are the major travel ways in the South Alternative corridor and are where the greatest number of viewers may see the transmission line ROW and roads. Together, the two roads provide access between parts of southeastern Idaho and the Swan Valley of Wyoming. The distance zones of the viewed landscape from these two roads range from foreground in the Narrows area, to background along the parts of Diamond Creek Road that pass through Upper Valley near the eastern end of the corridor. Viewers include some recreationists (campers and fall hunters), but are composed primarily of local people engaged in mining and ranching/farming who pass through the area.

Mill Canyon Road is a gravel surface that branches off Blackfoot River Road in the Narrows. It is less than 0.5 mile long and provides access to the Mill Canyon Campground. It is in an area that has a VQO of Partial Retention. Views to the south from the campground are very restricted by the side slopes of Mill Creek Canyon and nearby trees. Only the upper slopes of the ridges are visible in the middle ground from parts of the campground. Views from the middle and lower part of Mill Canyon Road include middle distance views of forested ridgetops south of the Blackfoot River.

Figure 3-7. Photo 7—View along Diamond Creek Road near where the South Alternative Corridor Ties into the LVE Line (pictured in photograph).

Figure 3-8. Photo 8—View of Upper Valley along Lanes Creek Road

Bureau of Land Management Lands

BLM has developed a visual resource manual to rate and assign Visual Resource Management (VRM) classes to landscapes in order to identify potential visual impacts on resources and determine the appropriate levels of management (BLM 2007; see Appendix B). The visual resource manual also provides a method to analyze potential visual impacts and apply visual design techniques to ensure surface-disturbing activities are in harmony with their surroundings (BLM 2007). The manual also identifies four VRM classes:

- **Class I—**Class I lands are managed to retain a natural landscape and include such areas as national wilderness and wild and scenic rivers. The level of change to the characteristic landscape should be very low and must not attract attention.
- **Class II—**Class II lands should retain the existing character of the landscape and the level of change to the characteristic landscape should be low.
- **Class III—**Class III lands are those lands that should partially retain the existing character of the landscape and where the level of change to the characteristic landscape should be moderate.
- **Class IV**—Class IV lands are managed to provide for activities which require major modifications to the existing character of the landscape. The level of change to the characteristic landscape can be high; however, attempts should be made to minimize impacts.

This section identifies the BLM lands crossed by each project corridor and describes their VRM classification and existing visual conditions.

North Alternative

As described in Section 3.2, Recreation, the Blackfoot Reservoir is managed by BIA; however, Blackfoot Reservoir Campground is managed by BLM and classified as Class II area. The Class II area is northwest of the North Alternative corridor in line miles 9 and 10. Facilities within the campground area have natural colors and visually complement the surrounding landscape.

The BLM land crossed by the North Alternative corridor at line mile 22 is classified as a Class II area. The North Alternative corridor crossing is about 0.5 mile long and traverses a hillside with patches of conifer as the elevation increases. There are no developed recreational or visitor attractions in this area.

South Alternative

Approximately 2.7 miles of the South Alternative corridor crosses BLM land, consisting of three parcels. All three parcels are classified as Class IV areas. Two of the parcels in the western portion of the corridor are characterized by steep slopes, undulating hills, rocky terrain, and highly disturbed mining areas. Most of the undisturbed south-facing slopes are covered with sage, while the north-facing slopes of the canyons are covered in thick stands of aspen and other vegetation. Views to the east along much of this section of the South Alternative corridor are constrained by the adjacent hillsides and an area highly altered by mining activities.

One BLM parcel is located in the eastern portion of the South Alternative corridor just prior to crossing the Blackfoot River at the Narrows and entering C-TNF lands. This parcel is classified as a Class IV area and is characterized by range land with terrain varying from open flat areas to hillsides. East-facing slopes near this portion of the corridor are generally covered in stands of aspens and deadfall with some areas of sage and bunch grasses.

Bureau of Indian Affairs Lands

BIA does not have specific guidance for evaluating visual resources and the agency does not conduct visual resource inventories of BIA lands. Guidance from the BLM visual resource manual was used to evaluate visual resources for BIA lands.

North Alternative

Based on the BLM's method, BIA lands within the North Alternative corridor fall within the BLM Class II and III land classifications.

The Blackfoot Reservoir is scenic and offers an undisturbed landscape with a high level of visitor use. West of the North Alternative corridor in line miles 11 to 16, BIA lands along the eastern edge of the Blackfoot Reservoir, near the Cedar Bay Marina could be classified as Class II. However, the Cedar Bay Marina and RV Park has been cleared of native vegetation, replaced with manicured lawns, and scattered with permanent and temporary RVs and campers.

Further north along the Blackfoot Reservoir, the North Alternative corridor (line miles 17 to 19) crosses about 1.7 miles of BIA-managed lands that could be classified as Class III (see Figure 3-9). Human-related influence on the visual landscape in this area consists of low wood and wire fencing along the highway. The landscape is dominated by low growing sagebrush-dominated vegetation with some areas of agricultural lands in nearby private parcels. Views along Highway 34 are wide, allowing for long vistas across the landscape. The foreground is mostly grasslands, agricultural lands, and grazing areas, transitioning to higher hills and forested ridges in the background.

Figure 3-9. Photo 9—Highway 34, Facing Blackfoot Reservoir

South Alternative

There are no BIA-managed lands within the corridor for the South Alternative.

Alternative Route Options

North Alternative Route Options

The Long Valley Road Option moves a portion of the North Alternative corridor from state-owned lands to private lands approximately 1 mile to the east. The landscape in this area is almost exclusively agricultural land. There are no residences along Long Valley Road and the only man-made features on the landscape include low wooden fences and a barn located at a 90-degree turn in the road. The foreground includes rolling agricultural fields, with forested ridges in the background.

The North Highland Option moves a portion of the North Alternative corridor from private land to private and C-TNF lands approximately 1/2 mile to the north. There are a few residences along this portion of Highway 34 and most private land is range with forested slopes on C-TNF lands.

South Alternative Route Options

Visual resources on state and federal lands along Options 1 and 2 are the same as those described for the South Alternative corridor. The western portions of Options 3 and 4 cross the same private agricultural and grazing lands north from Hooper Springs Substation site to near the China Hat and China Cap geological sites as the North Alternative, which appear in the background (see Figure 3-2). As described above for the North Alternative, a relatively large number of local and non-local motorists travel on Highway 34 in this area.

3.3.2 Environmental Consequences of the North Alternative

General Visual Impacts

Visual impacts from the North Alternative include temporary visual changes during construction and the permanent presence of the structures, conductors, access roads, and substation work. Visual quality and viewer sensitivity are combined to determine visual impacts. The level of visual intrusion created by the North Alternative is described with respect to the different relative distance zones, types of observers, and observation points. Relative distance zones include the foreground, middle ground, and background. Types of observers include local residents, commuters and travelers, employees, and recreational users. Additional information and photographs are presented in Appendix B.

Construction activities would create temporary changes in scenery by introducing helicopters, trucks and heavy equipment such as cranes and bulldozers to the area. Construction activities, anticipated to occur during 16 months of construction over a 2 year construction period, would be during daylight hours. Construction crews would be working in localized areas of the transmission line ROW and at the substations, and would be visible primarily to nearby viewers or those with a direct line-of-sight. Stringing of conductor by helicopter would be visible from a greater distance although it would be short term. The two temporary staging areas that would be needed along or near the line to store materials, equipment and vehicles would be visible to those in the immediate vicinity. The staging areas would likely be an existing developed site or parking lot about 10 acres in area, so no new areas would be developed.

Motorists (visitors, residents, and employees) on Highway 34 would likely notice an increased number of large trucks hauling materials to and from construction sites along the North Alternative corridor. While the number of trucks on roadways would increase, heavy machinery is not necessarily uncommon in the area; especially in the southern portion of the North Alternative corridor where phosphate mining and other industrial activities are already present. Caution signage and potential stops along roadways could distract users from scenery and introduce bright colors not naturally found in the landscape. Short-term visual impacts during construction are expected to be ***low*** to ***moderate*** and would depend on the location of active construction along the North Alternative corridor.

Hooper Springs Substation (and associated 138-kV transmission line) would be built directly adjacent to an existing substation and near a large phosphate mining operation on private land. Lanes Creek Substation would be built within the boundaries of the existing LVE Lanes Creek Substation. At both substation sites, the visual character of the land has already been altered and the introduction of new substation equipment and components would not substantially change the current visual setting. Short- and long-term visual impacts are expected to be ***low***.

Transmission line structures for the North Alternative would either be single-circuit steel single pole structures (line miles 1 to 11) with an average height of 100 feet or wooden H-Frame structures (line mile 11 to 32) with an average height of 70 feet (see Figure 2-1 in Section 2.2, North Alternative The permanent presence of steel and wood pole structures would create an obvious human made or industrial element to the landscape. Introduction of the new line would degrade the natural visual quality of the area, although transmission lines are typical in rural landscapes. Figure 3-10 shows an existing non-BPA transmission line in the North Alternative corridor, in a similar configuration as the proposed steel single pole structures. The transmission line is visible in the foreground along the road; however, the line quickly disappears into the background.

Figure 3-10. Typical Single-Circuit Transmission Line

Initially, the color of the steel structures would be reflective; however, after 2 to 3 years the structures would begin to dull. In the short term, the structures on private land may be more visually obtrusive compared to the wooden H-frames due to the unnatural color introduced to the landscape. In the long term, the steel structures would more easily blend into the natural setting, though not to the extent of the wooden H-frames. The presence of a new transmission line in the North Alternative corridor would initially be a new visual obtrusion on the landscape; however, over time regular motorists and local residents would become familiar with the transmission line and associate it with the existing landscape.

Access roads would also create a visual impact both in the foreground and in the distance, with new roads producing a more evident visual change than improvement of existing roads. Access road improvement (widening, blading, and/or gravel) would brighten the roads, and would make them more visible from a distance than they may be currently. Because temporary roads would be removed from crop lands after construction, they would not create a permanent visual impact. Unlike transmission lines, which form straight lines and angles, access roads can curve and follow terrain. In flat areas, roads are not seen as well from a distance, but on steep slopes, especially where cut and fill is needed, roads would likely appear more obvious unless uneven terrain allows them to be hidden on the hillside.

Visual photo simulations were prepared to help illustrate what the landscape might look like with the addition of the North Alternative. Because transmission lines similar to those included in the North Alternative tend to blend in with the background as the viewer's distance from the line increases, red arrows have been added to the visual simulations to indicate the approximate location of the proposed transmission line.

Impacts Specific to Private and State Lands

The Proposed Hooper Substation and North Alternative would be visible to travelers on roadways and most frequently visible to local landowners. There is a low level of traffic on Threemile Knoll Road and China Hat Road; however, the North Alternative is located directly adjacent to these roads. Highway 34 is more highly traveled and would have more viewers traveling along the roadway. Except for approximately 2 miles (between line miles 6 and 9), the transmission line would be in the middle ground when viewed from Highway 34 and may not be as noticeable to motorists passing through the area (see Figure 3-11). Additionally, the visual integrity in this area is already lower as a result of the existing phosphate mine and extraction area to the east of Highway 34 (line miles 1 to 10).

Figure 3-11. Photo-simulation of the North Alternative at the Intersection of China Hat Road and Highway 34

Where the North Alternative parallels Highway 34, it would be in the foreground and may not blend into the background as well as in other places. Since the area is mostly flat and the transmission line would be immediately adjacent to the road, the backdrop of the landscape would likely be the sky, creating a distinct contrast against the transmission structures. Motorists in this area would mostly include commuters to Soda Springs and the phosphate mining areas and those traveling the scenic byway. While the transmission line would likely be visible, motorists would move through the area quickly. Over the long term, impacts on travelers in this area are expected to be ***low*** to ***moderate***. In addition to travelers, there are also a number of residences along Highway 34 and other secondary roads in this portion of the North Alternative corridor. For people living this this area, the line would likely be more visible and a new element on the landscape. There are other transmission lines in this area of the corridor and mining operations also contribute to the landscape. Depending on the view of a resident, the North Alternative would likely have both short- and long-term ***moderate*** impacts.

The North Alternative would cross over the highway and would be highly visible to travelers on Highway 34. After crossing over Highway 34, the North Alternative quickly moves behind steeper topography on state lands. Based on the viewshed analysis (Appendix B) the transmission line would not be visible to travelers on Highway 34 for approximately 3 miles due to its location behind foothills. Long-term visual impacts in this area are expected to be ***moderate*** where the North Alternative corridor crosses over Highway 34, but ***low*** to ***none*** where it crosses state lands.

The North Alternative corridor exits state lands (near line mile 15) and enters private lands where it continues north to the town of Henry. Here it intermittently crosses private lands as it parallels Highway 34 for about 3 miles. In this area, the North Alternative corridor would have the potential to be visible depending on the viewer's vantage point. Travelers along Highway 34 and local residents near Henry would likely experience short- and long-term, ***low*** to ***moderate*** impacts depending on their vantage point and length of stay in the area. The North Alternative corridor also crosses private lands approximately between line miles 19 and 21. However, except for the area close to Highway 34, this area lacks both residents and well-traveled roads and therefore impacts would likely be ***low***.

After crossing federal lands, the proposed transmission line would cross approximately 5 miles of private lands (line miles 26 and 31) that include a broad valley with a number of local residents along Wayan Loop Road. Travelers along Wayan Loop Road and those living in the area would be expected to experience short- and long-term, ***moderate*** to ***high*** impacts associated with construction and operation of the proposed transmission line as it would create a new element in a natural/pastoral setting.

Impacts from maintenance activities under the North Alternative, including helicopter patrols, would be ***low*** given their short and infrequent nature.

Impacts Specific to Forest Service Lands

As described above, the North Alternative corridor would initially cross approximately 4 miles of land classified by the USFS as Partial Retention, which allows management activities that remain visually subordinate to the characteristic landscape (USFS 2003b). Construction-related activities such as tree clearing, access road development, and structure installation and conducting would increase the level of activity in the area potentially affecting visitor and residents in the short term during the 16 months of construction over the 2 year construction period. New access roads would not likely affect the visual integrity of the area as they would be similar to C-TNF roads in look and size. As a result of construction-related activities, impacts on visual resources on C-TNF lands would be short term and ***low*** to ***moderate***.

Adhering to the USFS utility corridor guidelines, the proposed structures on C-TNF land would be wooden, thus blending into the background shades of green and brown. While on this portion of the forest, much of the proposed transmission line would be hidden from site, as it would be sited though a narrow valley with steep slopes on both sides. Therefore, presence of the proposed transmission line would have a long-term, ***low*** impact on the visual landscape of the area.

As the North Alternative turns south on C-TNF lands and roughly parallels Wayan Loop Road, it would become more visible to local residents and motorists. As it descend from higher elevations along Gray ridge and traverses Henry Cutoff on Forest Service lands, it would become more apparent to observers along the roadway as they approach forest lands from the east. Because it would be located in the foreground amid a forested backdrop, however, the transmission line would not be particularly noticeable as it would blend with adjacent landscape features. Moreover, views of the transmission line would eventually be obscured by trees as motorists enter the forested areas, at which point much of the North Alternative would be hidden from sight (see Figures 3-12 and 3-13).

Figure 3-12. Photo-simulation of the North Alternative as it Traverses across Henry Cutoff Road on Forest Service Lands

During construction, visual impacts while on C-TNF lands along Wayan Loop Road and Henry Cutoff Road would be short term and ***moderate***, similar to impacts from construction activities in other areas of the C-TNF. However, based on the use of wood poles and associated landscape features, it is expected that, the proposed transmission line would have a long-term, ***low*** impact on the visual landscape.

Figure 3-13. Photo-simulation of the North Alternative along Wayan Loop Road

The North Alternative corridor would also cross approximately 0.5 mile of a Retention-classified USFS parcel, as it approaches the Lanes Creek Substation (see Figure 3-14). The transmission line would be visible to viewers in limited areas while crossing the Retention area due to topography and vegetation. There would be increased impacts on the visual character of the area during construction of the proposed transmission line and new access roads, though it would be short term and ***low*** to ***moderate***. The transmission line would utilize wooden structures and would be sited in an area crossed by existing transmission lines. Therefore, it would be consistent with the form, line, color and texture of the surrounding landscape and in the long term would be compliant with the Retention classification. Approximately 1 mile of Highway 34 crosses through USFS Retention lands; therefore, motorist or residents would move through the affected area quickly, resulting in long-term, ***low*** visual impacts.

Figure 3-14. Photo-simulation of the North Alternative along Highway 34 entering C-TNF Lands

Continuing east to the Lanes Creek Substation, the USFS classification changes to Partial Retention (USFS 2003b). The landscape consists of low to moderate topography with groves and clumps of low growing trees and shrubs. As the natural character of the landscape is altered by existing substation and LVE's transmission lines, the landscape would absorb the visual impacts from the North Alternative. There would be impacts on the visual character of the area during construction of the proposed transmission line, access roads development, and installation of new substation equipment with the substation, though it would be short term and ***low*** to ***moderate***. The visual impacts associated with the proposed transmission line and substation in this area is expected to be long term, but ***low***.

As described above, visual impacts during maintenance activities would be short in duration and intermittent over time and would be expected to be long term and ***low***.

Impacts Specific to Bureau of Land Management Lands

The North Alternative would be visible from Class II lands at Blackfoot Reservoir Campground. The steel single pole structures would not be a dominant feature on the landscape, because the North Alternative corridor is almost 4 miles away from the campground; therefore, visual impacts are expected to be long term and ***low***. In addition, it is unlikely that any construction or maintenance-related activities would be visible from this area.

The North Alternative corridor would also cross two Class II BLM parcels. Based on BLM methods, Class II lands should retain the existing character of the landscape and the level of change to the characteristic landscape should be low. The first BLM parcel (line mile 22) lacks generally accessible roads to the area and no human dwellings are visible in close proximity. Therefore, this portion of the proposed transmission line would not be a visually intrusive element on the landscape. Based on aerial photography, the BLM crossing area is located on a generally forested ridge with cleared patches of land and no recreation or visitor attractions. The addition of a transmission line would change the characteristics of the landscape; however, due to the distance from viewers, the structures would not likely be visible to motorists or residents in the area. The cleared portions of the North Alternative corridor may be visible to viewers at a distance; however, given the short distance and patch-work of forested and non-forested areas it would be unlikely to be highly visible. Therefore, visual impacts on this BLM parcel would be expected to be long term, but ***low***. In addition, it is unlikely that any construction or maintenance-related activities would be visible from this area.

The second BLM Class II area would be crossed by the North Alternative corridor between line miles 24 and 25. The parcel is bordered on two sides by C-TNF lands and two sides by private lands near Wayan Loop Road. This parcel is forested primarily with conifers and aspen. The proposed corridor would cross the corner closest to C-TNF lands. The interior of this parcel is inaccessible by road and an access road would be constructed that bisects the parcel. Based on the topography, the proposed transmission line would follow the base of the ridge and it is unlikely that the proposed transmission line structures and ROW would be visible. In addition, the structures would be wooden H-frame and would blend with vegetation in the area. Construction-related activities such as ROW clearing, access road construction, and structure installation would result in short-term, ***low*** to ***moderate*** impacts during the construction period given the small area of the BLM parcel traversed by the North Alternative. The access road would be similar in nature to other roads in the area and gated to limit access to authorized personnel. Operation of the North Alternative would likely result in long-term, ***low*** impacts on the parcel. In addition, visual impacts during maintenance activities would be short in duration and intermittent over time and would be expected to be long term and ***low***.

Impacts Specific to Bureau of Indian Affairs Lands

The North Alternative corridor would cross over Highway 34 (highly visible) adjacent to the Cedar Bay Marina and RV Park and would enter a BIA parcel, deemed Class III for this analysis, near the Blackfoot Reservoir. The Cedar Bay Marina and RV Park is located within these Class III lands, but is not crossed by the proposed transmission line. As described previously, the landscape in the marina area has been heavily altered and the construction of a transmission line would likely only have long-term, ***low*** impacts on the integrity of the landscape.

After crossing Highway 34, the portion of the North Alternative corridor crossing BIA-managed lands would run approximately 0.2 mile west of Highway 34; thus, placing the transmission line out of the foreground and into the middle ground from Highway 34. The location of the transmission line in this area would allow it to blend into the landscape and be less obvious to residents and motorists. There are low wooden and wire fences present in the foreground, with scattered homes and agricultural buildings in the middle ground. The wooden transmission structures would mimic the linear wooden fence lines, allowing the structures to blend in with current settings of the landscape, reducing impacts on visual resources, as shown in Figure 3-15. There are very few residents in the area; however, local residents and motorists passing through the area on Highway 34 would be the most frequent viewers of the transmission line. Visual impacts in the area are expected to be long term and ***moderate*** given the generally undisturbed nature of the landscape.

Figure 3-15. Photo-simulation the North Alternative along Highway 34 in the BIA Parcel

Additionally the proposed transmission line would be visible from North Reservoir Road, on the northeast side of the Blackfoot Reservoir. BIA lands along North Reservoir Road would be classified as Class II under BLM standards. Due to topography and the distance from the transmission line (approximately 0.75 mile), views from these parcels would be limited and the structures would likely blend into the background. Changes to the landscape and its visual resource would likely be long term and ***low*** to ***moderate***, as changes would not dominate the view and visitor activities would still occur in this area.

There would be long-term impacts expected from the continued presence of the structures operating under the Project, as described above. Maintenance activities, such as routine patrols, structure repair, or vegetation maintenance would occur on an intermittent basis, but would be of limited duration. The occasional presence of maintenance equipment or vehicles would be temporary and is unlikely to measurably affect the overall visual quality of the project corridor. These temporary maintenance activities would result in ***low*** visual impacts.

North Alternative Route Options

Under the Long Valley Road Option, the North Alternative corridor would be located approximately 0.1 mile or greater away from any named roadway until it approaches Highway 34 near the town of Henry at its northern terminus. The proposed corridor would be located in a broad valley, potentially increasing the visual impacts on residents located along Long Valley Road. However, there are very few homes along Long Valley Road; most landowners in the area own large (100+ acre) parcels. The proposed transmission line would be visible to these residences and be an added element to the landscape. There are other transmission lines in the area of this option, and it would be expected that this option would be a minor visual element on the landscape, given the presence of other lines. Construction-related activities, such as ROW and access road development, structure installation, and line conductoring would be expected to have short-term ***low*** to ***moderate*** impacts on those residents along or users of Long Valley Road. Overall, given the nature of the landscape and presence of other similar transmission lines, the long-term impacts of the North Alternative would be ***low***. Maintenance activities along this portion of the ROW would be infrequent and limited in duration given the cultivated nature of the landscape and therefore any long-term associated impacts would be ***low***.

The Long Valley Road Option would not be visible to viewers on Highway 34. In addition, it is unlikely that the transmission line would be visible from Blackfoot Reservoir Campground due to intervening topography.

The North Highland Option would move the North Alternative corridor north of Highway 34 where it would not be visible from the highway in line miles 30 to 32. The North Highland Option would be located along the top of a foothill and out of the viewshed of a residence potentially decreasing impacts on those residents. Without this option, the North Alternative structures and access roads would be visible from Highway 34 and the above residence. Construction-related activities, such as ROW and access road development, structure installation, and line conductoring would be expected to have short-term ***low*** to ***moderate*** impacts on residents or travelers along Highway 34. Overall, given that the corridor would partially hidden from viewers and residences, the long-term impacts of the North Highland Option would be ***low***.

3.3.3 Environmental Consequences of the South Alternative

General Visual Impacts

Visual impacts from the South Alternative would be similar to those from the North Alternative; temporary visual changes would occur during construction and the permanent visual changes would be caused by the presence of the structures, conductors, access roads, and substation work. The level of visual intrusion created by the South Alternative is described in the same manner as for the North Alternative. Relative distance zones include the foreground, middle ground, and background and types of observers include local residents, commuters and travelers, employees, and recreational users.

Construction activities described for the North Alternative would be the same for the South Alternative. Temporary changes in scenery would occur with the use helicopters, trucks and heavy equipment. During the anticipated 16 months of construction, activities would take place during daylight hours in localized areas of the South Alternative corridor at the proposed Hooper Springs Substation site, and the proposed BPA connection facility with LVE. Short-term activities such as stringing of conductor by helicopter and use of temporary staging areas would be visible from a greater distance although they would be short term. Similar to the North Alternative, staging areas would likely be an existing developed site or parking lot, so no new areas would be developed.

As with the North Alternative, motorists on Highway 34 would likely notice construction equipment and activities in the western portions of the South Alternative corridor. However, heavy machinery is not uncommon in the area since phosphate mining and other industrial activities are already present. Similar to the North Alternative, caution signage and potential stops along roadways could distract users from scenery and introduce bright colors along the South Alternative corridor. Short-term visual impacts during construction are expected to be ***low*** to ***moderate*** and would depend on the location of active construction along the South Alternative corridor.

Impacts on the visual setting from the Hooper Springs Substation (and associated 138-kV transmission line) would be the same as described for the North Alternative; short- and long-term and ***low***.

Transmission line structures for the South Alternative would be double-circuit steel single pole structures with an average height of 85 feet (see Figure 2-1 in Section 2.2, North Alternative). Similar to the North Alternative, construction of steel structures would create an obvious human made or industrial element to the landscape. Introduction of the new line would degrade the natural visual quality of the area, although transmission lines are typical in rural landscapes. Figure 3-16 shows an existing non-BPA double-circuit transmission line in a similar configuration as the proposed steel single pole structures.

Figure 3-16. Typical Double-Circuit Transmission Line

As with the North Alternative, the color of the steel structures would be reflective initially but would dull after 2 to 3 years. The presence of a new transmission line would initially be a visual obtrusion on the landscape although over time motorists and residents would become familiar with the transmission line and associate it with the existing landscape.

Access roads for the South Alternative would also create a visual impact both in the foreground and in the distance, with new roads producing a more evident visual change than improvement of existing roads similar to the North Alternative. Temporary roads would be removed from crop lands after construction; they would not create a permanent visual impact similar to the North Alternative. Unlike transmission lines, which form straight lines and angles, access roads can curve and follow terrain. In flat areas along the South Alternative corridor, roads would not be seen as well from a distance similar to the flat areas along the North Alternative. On steep slopes near the eastern end of the South Alternative, roads would likely be more obvious unless hidden by uneven terrain.

Visual photo simulations were prepared to help illustrate what the landscape might look like with the addition of the South Alternative.

Impacts Specific to Private and State Lands

Similar to the North Alternative, the southeastern portion of the South Alternative would be visible to travelers and residents travelling along Highway 34 through private land. As described under the North Alternative, motorists along Highway 34 would include commuters to Soda Springs and the phosphate mining areas and those traveling the scenic byway. Where the South Alternative corridor would cross Highway 34 near Conda (between line miles 2 and 3), the transmission line would be in the foreground. However, views of the line would be brief and the visual integrity in this area is already low due to the presence of the existing phosphate mine east of Highway 34 (line miles 3 to 7). Long-term visual impacts on travelers and commuters through private lands in the southeastern portion of the South Alternative would be ***low***.

After crossing through the mining area near Conda, the South Alternative would be highly visible to travelers along Blackfoot River Road as it runs east and over the Blackfoot River. The line and access roads would be visible from this point on until the corridor reaches the Narrows area. There are a few residences in this area so most people using the road would be residents, mine workers, or recreational users. Long-term visual impacts would be ***moderate*** because construction of steel structures would create an obvious human made or industrial element to the landscape. Long-term impacts on the state-owned parcel along this portion of the South Alternative would also be ***moderate*** because the line would bisect the parcel placing structures and roads in the valley bottom along the Blackfoot River.

Impacts on private and state lands from maintenance activities under the South Alternative, including helicopter patrols, would be ***low*** given their short and infrequent nature.

Impacts Specific to Forest Service Lands

As described above, construction-related activities such as tree clearing, access road development, and structure installation and conductoring would increase the level of activity on C-TNF lands potentially affecting visitors in the short term: a ***low*** to ***moderate*** impact during construction. Workers and large equipment would be visible along the South Alternative corridor during construction. Access to structures would occur via adjacent roads and motorists would be exposed to construction activity that could include intermittent lane closures while construction takes place.

Also described above, the South Alternative corridor would cross lands classified by the C-TNF as Partial Retention at the Narrows and Modification near the east end of the transmission line corridor. As with the North Alternative, the most visible components of the South Alternative would be the 120-foot-wide cleared ROW, the 85-foot tall transmission structures, and the conductor. Where Blackfoot River Road enters the C-TNF, the South Alternative would be closer and more visible to viewers although views this close to the crossing would be brief. East of the entrance sign to the C-TNF, the corridor would make a sharp turn to the south, cross over Blackfoot River Road and the Blackfoot River, and travel easterly up a forested and open side slope approximately 500 to 600 feet to the top of Dry Ridge (see Figure 3-17). The transmission line would be visible to people driving on Blackfoot River Road and by people along the shores of (or in) the Blackfoot River. The ROW would be visible as an unvegetated area on the side slope, and several of its structures would be seen above adjacent trees silhouetted against the background sky (see Figure 3-17). Although these changes might be visible to most Forest visitors, the proposed corridor and structures would be visually subordinate to the landscape character as the presence of a forested landscape would dominate. Based on the limited development in the area of the South Alternative and the dominant natural landscape features, the South Alternative would still meet the Partial Retention VQO. Long-term impacts on visual resources are expected to be ***low*** to ***moderate***.

Figure 3-17. Photo-simulation the South Alternative along Blackfoot River Road towards the Narrows and entry to the CNF.

The second area on the C-TNF where the South Alternative corridor would be seen by the public and Forest visitors would be where it traverses down the east facing slopes of Dry Ridge and ties into the exiting LVE line next to Diamond Creek Road. The corridor would be seen by people traveling on the part of Diamond Creek Road adjacent to the connection facility. The portion of the C-TNF at the east end of the route has a VQO of Modification. Lands with a VQO of Modification allow the landscape to be moderately altered. Deviations to the landscape can begin to dominate the valued landscape character. The transmission line would not exceed the requirements for Modification and thus would be consistent with the VQOs resulting in a ***low*** to ***moderate*** impact on visual resources.

The South Alternative corridor would not be visible from the Mill Canyon Campground or Mill Canyon Road because of screening by topography and trees.

Impacts Specific to Bureau of Land Management Lands

All three BLM parcels crossed by the South Alternative are Class IV, which allow for major modifications to the landscape. Impacts on visual resources on the BLM parcel located near Conda would be ***low***. This area is already heavily disturbed by the presence of the mine and associated facilities.

Visual resource impacts on the other two BLM parcels along Blackfoot river Road and near the Narrows and adjacent to the C-TNF would be the same as the C-TNF lands in this area; long term and ***low*** to ***moderate***. However, it would not rise to the level of Class IV-type visual impacts. The South Alternative corridor would be visible along the north side of Blackfoot River Road as it travels through rangeland (see Figure 3-18).

Figure 3-18. Photo-simulation of the South Alternative along Blackfoot River Road where the Line Leaves the C-TNF and Enters BLM Lands

South Alternative Route Options

Impacts on visual resources along all South Alternative options during construction would be same as the South Alternative: short term and ***low*** to ***moderate*** depending on the location of active construction. Long-term impacts on visual resources on private, C-TNF, and BLM lands from Options 1 and 2 would be similar to those under the South Alternative; ***low*** near Conda and ***low*** to ***moderate*** along Blackfoot River Road. Options 2, 3, and 4 would cross the Blackfoot

River at slightly different sections of the Narrows than the South Alternative making them more visible to visitors and motorists driving east along Blackfoot River Road. Impacts along the western portions of Options 3 and 4 through agricultural lands and mining areas would be the same those under the North Alternative; ***low*** to ***moderate***.

3.3.4 Mitigation

The following mitigation measures have been identified to reduce or eliminate visual impacts from the Project.

- Develop irregular ROW edges (feathering) on C-TNF lands to break up the visual pattern, as practicable.
- Utilize non-specular (non-reflective) finish on transmission lines, insulators, and other hardware to reduce reflection.
- Implement construction site maintenance and clean-up. Keep construction areas free of debris.
- Leave undisturbed plants less than 4 feet in height undisturbed within the 100-foot-wide ROW where it would not interfere with the safe operation of the transmission line to help reduce the effect of the cleared ROW on visual and aesthetic resources.

3.3.5 Unavoidable Impacts Remaining after Mitigation

Unavoidable impacts on the visual landscape would occur from placement of transmission line structures and ROW clearing because these elements would be visible on the landscape. However, the alternative routes were determined in part by concern for the visual impacts that a new transmission line would have on the project area. The proposed routes would minimize visual impacts by following existing linear features in the landscape, utilizing natural colored structures (wood poles for a portion of the North Alternative), and revegetating the ROW with native, low-growing species. The level of visual impact would vary based on the transmission line's location in the project area given the topography, potential viewers, and the type of materials used.

3.3.6 No Action Alternative

Under the No Action Alternative, the Project would not be built, so the impacts on visual resources related to the construction, operation, and maintenance of the transmission lines would not occur.

3.4 Vegetation

3.4.1 Affected Environment

Vegetation Communities

The project area is within two ecoregions: the Northern Basin and Range Ecoregion, and the Middle Rockies Ecoregion (McGrath et al. 2002). The Northern Basin and Range Ecoregion is a high, cool region, characterized by dissected lava plains, rolling hills, alluvial fans, and scattered mountains. The portion of the project area within this ecoregion has been largely converted for agricultural and mining purposes, but some areas of relatively intact sagebrush steppe vegetation communities remain.

The eastern extent of the project area is located within the Middle Rockies Ecoregion. This portion of the project area is characterized by the marshes and bottomland terraces associated with Gray's Lake and the upper Blackfoot River, and also by the steep, dry, partly forested mountains of the Gray's Range. Most of the forested vegetation communities within the project area are managed by C-TNF.

Eight vegetation communities occur within the project area, including native and non-native vegetation communities. The individual communities are defined based on differences in dominant/subdominant plant species, habitat suitability, and level of human activity. The vegetation communities are identified and briefly described in Table 3-10, and are discussed in greater detail below. See Appendix C, Plant Species Inventory.

Table 3-10. Vegetation Communities within North and South Alternatives[1]

Vegetation Communities		North Alternative (acres)	South Alternative (acres)
Native Vegetation Communities	Sagebrush-dominated	154.5	149.5
	Mountain shrub-dominated	3.9	2.0
	Grass-dominated	61.3	92.6
	Aspen-dominated	38.8	8.9
	Conifer-dominated	64.8	53.7
	Wetlands	12.6	0.8
	Basalt outcrops with native vegetation	9.0	6.6
Other Vegetation Communities	Seeded grasslands and agricultural and non-native vegetation	78.2	41.9

Source: BPA 2009

[1] The project corridor includes ROW, access roads, staging areas, pulling sites, and substations.

Sagebrush-dominated

The sagebrush-dominated community is the most prevalent native vegetation community in the corridors for the North and South alternatives, comprising approximately 154.5 and 149.5 acres, respectively, as noted in Table 3-10. This vegetation community occurs on a variety of sites including dry, south-facing slopes and low-elevation public lands that have not been converted to agriculture or other uses. The size and quality of sagebrush-dominated communities within the alternative corridors varies greatly. Many small patches present are less than 1 or 2 acres, but large contiguous patches also occur on state and federal lands.

This vegetation community is characterized by the presence of one or more sub-species of big sagebrush (*Artemisia tridentata*). Wyoming big sagebrush (*Artemisia tridentata* var. *wyomingensis*) and tall three-tip sagebrush (*Artemisia tripartita* var. *tripartita*) are common throughout the range of elevations present within the project corridor. Mountain big sagebrush (*Artemisia tridentata* var. *vaseyana*) is present at cooler, mid-elevation sites, while silver sagebrush (*Artemisia cana*) is present at higher elevations. Other shrub species commonly present in sagebrush-dominated plant communities include bitterbrush (*Purshia tridentata*), yellow rabbitbrush (*Chrysothamnus viscidiflorus*), gray rabbitbrush (*Ericameria nauseosa*), and spineless horsebrush (*Tetradymia canescens*). Typical understory grasses include Sandberg's bluegrass (*Poa secunda*), junegrass (*Koeleria macrantha*), Idaho fescue (*Festuca idahoensis*), needle-and-thread grass (*Heterostipa comata*), and bluebunch wheatgrass (*Pseudoroegneria spicata*). Typical herbaceous species include parsnipflower buckwheat (*Eriogonum heracleoides*), arrowleaf balsamroot (*Balsamorhiza sagittata*), salsify (*Tragopogon dubius*), white hawkweed (*Hieracium albiflorum*), larkspur (*Delphinium* spp.), and biscuitroot (*Lomatium* spp.).

Mountain Shrub-dominated

Mountain shrub-dominated communities are typified by medium-sized shrub species, such as chokecherry (*Prunus virginiana*), serviceberry (*Amelanchier alnifolia*), and buckthorn (*Rhamnus alnifolia*). Approximately 3.9 acres of mountain shrub-dominated communities occurs within the corridor of the North Alternative along ridgetops and margins of forested and riparian areas on C-TNF. The corridor of the South Alternative contains approximately 2.0 acres of mountain shrub-dominated communities.

Mountain shrub-dominated sites within the project area are found in openings next to conifer and quaking aspen (*Populus tremuloides*) stands, and typically have a few quaking aspen in the overstory. Stands are typically densely populated with shrubs, and understory growth is sparse. Understory species, when present, consist of herbaceous species such as mule's ears (*Wyethia amplexicaulus*), buckwheat, biscuitroot, and heartleaf arnica (*Arnica cordifolia*).

Grass-dominated

Grass-dominated communities consist of native grass species, rather than seeded or non-native species. Grass-dominated plant communities within the project area are typically found on steep, rocky, south-aspect slopes and gentle slopes where soils are deeper. These communities are typically closely associated with, and interspersed between, areas dominated by sagebrush. The corridor of the North Alternative includes approximately 61.3 acres of grass-dominated vegetation, while 92.6 acres of grass-dominated vegetation occur within the corridor of the South Alternative.

In grass-dominated vegetation communities, one or more species of sagebrush may be present, but the dominant plant species consist of native grasses and herbaceous species. On steep, rocky sites, typical species include bluebunch wheatgrass, Junegrass, and pinegrass (*Calamagrostis rubescens*). Arrowleaf balsamroot is also abundant on some sites. Other herbaceous species that are common to a lesser degree include lupine (*Lupinus* spp.), buckwheat, biscuitroot, and Oregon grape (*Berberis repens*). On sites where slopes are gentler and soils are deeper, Idaho fescue, and needle-and-thread grass are also typically present.

Aspen-dominated

Quaking aspen occurs as a minor component of several vegetation communities within the project area, but also occurs in relatively pure stands. Aspen-dominated stands are found at the base of the forested mountains of the Gray's Range, adjacent and intermixed with mountain shrub vegetation on ridgetops and in riparian areas. They also occur as isolated stands among sagebrush-dominated communities. The corridors of the North and South alternatives include approximately 38.8 and 8.9 acres of aspen-dominated forest, respectively.

The forested stands at the northern end of the Gray's range are characterized by relatively mature aspen and an understory dominated by mountain shrubs such as serviceberry, chokecherry, snowberry (*Symphoricarpos alba*), Nootka rose (*Rosa nutkana*), evergreen huckleberry (*Vaccinium ovatum*), and currants (*Ribes* spp.). Almost all of these stands have a component of Douglas-fir (*Pseudotsuga menziesii* var. *glauca*) that is greater than 10 percent of the overstory canopy, or that is regenerating in the sapling layer. Herbaceous understory vegetation in these stands consists predominantly of pinegrass and/or elk sedge (*Carex geyeri*). Other herbaceous species include northern bedstraw (*Galium boreale*), mule ears, sticky purple geranium (*Geranium viscossissimum*), and elegant aster (*Eucephalus elegans=Aster perelegans*).

Isolated stands of quaking aspen that occur interspersed with sagebrush communities are similar in composition, though trees tend to be smaller, and understory vegetation tends to be more variable. Some stands have fairly dense understories dominated by shrubs such as serviceberry, roses, and currants. Other stands are relatively open in the understory, with Wyoming big sagebrush and tall three-tip sagebrush as dominant shrubs. Rocky mountain juniper (*Juniperus scopulorum*) is also frequently a component of these stands.

Conifer-dominated

Conifer-dominated plant communities are primarily present within the portions of the corridor of the North Alternative that are located on the C-TNF, and include approximately 64.8 acres of conifer-dominated forest. About 53.7 acres of conifer-dominated forest occur in the corridor of the South Alternative, primarily in C-TNF lands on the eastern end of the proposed ROW.

The conifer-dominated forests are typically mixed conifer stands, with Rocky Mountain Douglas-fir as the climax species. Other coniferous species include lodgepole pine (*Pinus contorta*), and subalpine fir (*Abies lasiocarpa*). Engelmann spruce (*Picea engelmannii*) is also infrequently present at higher elevations.

Most of the conifer-dominated stands within the project corridor of the North Alternative are mature Douglas-fir between 100 and 180 years of age. These stands typically have a few large, old relic trees less than 150 years old.

Understory vegetation typically consists of shrubs such as serviceberry, Nootka rose, and snowberry, and grasses and forbs such as pinegrass, elk sedge, licorice root (*Osmorhiza chilensis*), Oregon grape, and sticky purple geranium.

Some of the younger conifer-dominated forest stands are mixed conifer/aspen stands (typically seral Douglas-fir stands) that have not yet reached a climax Douglas-fir plant community. These stands are typically less than 100 years old, and have an understory that is more densely vegetated with shrubs and saplings.

<u>Wetlands</u>

A detailed discussion of wetland resources and impacts can be found in Section 3.6, Water Resources, Floodplains, and Wetlands. In total, the corridors of the North and South alternatives include approximately 12.6 and 0.8 acres of wetlands, respectively.

Several emergent wetlands occur in association with riparian floodplain areas adjacent to the Blackfoot River, Little Blackfoot River, Gravel Creek, and portions of Meadow Creek. Reed canarygrass (*Phalaris arundinacea*) is the predominant emergent species in these riparian wetlands, but other native emergent sedges (*Carex praegracilis*, *Carex utriculata*), rushes (*Juncus acuminatus*, *Juncus ensifolius*), and meadow barley (*Hordeum brachyantherum*) are present. Scrub-shrub wetlands in the project area are dominated by Booth willow (*Salix boothii*), Wolf's willow (*Salix wolfii*), coyote willow (*Salix exigua*), and red osier dogwood (*Cornus sericea*).

<u>Basalt Outcrops with Native Vegetation</u>

Basalt outcrops are primarily confined to agricultural lands in the southwestern portion of the project area. These are isolated rocky outcrops where land has not been tilled and where native vegetation has been preserved within areas otherwise converted to agricultural uses. Many of these areas are very small and uniform, less than 100 square feet. Others are larger and/or have more irregular shapes. The corridor of the North Alternative includes approximately 9.0 acres of basalt outcrops, while the corridor of the South Alternative includes 6.6 acres of basalt outcrops.

Vegetation on these basalt outcrops is typically limited to low-growing shrubs such as sagebrush (typically silver sagebrush, Wyoming big sagebrush, or tall three-tip sagebrush), bitterbrush, chokecherry, and serviceberry; low-growing forbs such as mule ears, yarrow, and buckwheat; and bunchgrasses such as basin wildrye (*Elymus=Leymus cinereus*) and Idaho fescue.

There are also a few long, linear basalt outcrop features in the southwestern portion of the project area. These linear outcrop features are sparsely forested talus slopes. They are situated along a north-south axis, are approximately 100 to 200 feet in elevation, and range in length from 200 to 300 feet to over 3 miles. The dominant tree in these areas is quaking aspen, and there are many snags present. Shrub and understory composition is similar to other basalt outcroppings, where it occurs, but the majority is talus slopes with little vegetation.

Other Vegetation Communities

The project area includes farm and agricultural lands and non-vegetated areas. Agricultural land is the most common vegetation community, and includes cultivated fields and managed pastures that are used for grazing and hay production. Primary cultivated crops are small grains, mostly grown without irrigation. The North Alternative includes 78.2 acres and the South Alternative includes 41.2 acres of other vegetation communities.

Special Status Plant Species

Special status species are those species that have been identified for protection under federal or state laws. These species include species listed under the federal Endangered Species Act (ESA) of 1973, species listed as threatened, endangered, or sensitive by the state of Idaho, and/or species identified as sensitive by USFS and/or BLM. Table 3-11 lists special status plant species that are known or expected to occur in or near the project area, and assesses their likelihood of occurring. The corridor for the North Alternative was surveyed for the presence of special status species during botanical surveys conducted in May and July 2011. Public lands were surveyed on foot. Privately owned lands were evaluated from publicly accessible vantage points, and supplemented with data collected during helicopter surveys in July 2011. More detailed information regarding special status species is presented in Appendix D Vegetation Special Status Species. Additional follow-up surveys will be conducted in Spring/Summer 2013 to assess any new occurrences of special status species on the North and South alternatives and their route options and appropriate avoidance measures would be developed to the extent possible.

Ute ladies'-tresses (*Spiranthes diluvialis*) is the only ESA-listed species (threatened) with documented occurrence in Southeast Idaho. There have been documented occurrences in Bonneville, Jefferson, and Madison counties in Idaho, but USFWS considers all of Idaho to be within the potential range of the species (IDFG 2011a). Ute ladies'-tresses is not listed by U.S. Fish and Wildlife Service (USFWS) as potentially occurring in Caribou County. Ute ladies'-tresses is categorized as critically imperiled (S1) by the state of Idaho; however, this species was not encountered during field surveys of the North Alternative conducted in May and July 2011. Similarly, no Ute ladies'-tresses were documented during field surveys of the South Alternative.

Whitebark pine (*Pinus albicaulis*), a federal candidate species, is a 5-needled conifer classified as a stone pine. Whitebark pine is typically found in cold, windy, high elevation or high latitude sites in western North America and as a result, many stands are geographically isolated. This species is a stress-tolerant pine that grows in Coastal Mountain Ranges (from British Columbia, Washington, Oregon, down to east-central California) and Rocky Mountain Ranges (from northern British Columbia and Alberta to Idaho, Montana, Wyoming, and Nevada) (USFWS 2012a). In Idaho this species is found at elevations between 7,300 and 10,500 feet (USFS 2012). Whitebark pine was not encountered during field surveys conducted along the corridor for the North Alternative, including old growth surveys conducted at the highest elevations; however, the majority of the corridor is below 7,300 feet in elevation. Similarly, the South Alternative is also lower in elevation compared to the area where whitebark pine is typically found. The potential for whitebark pine presence in the South Alternative will be assessed through additional follow-up surveys during summer 2013.

Payson's bladderpod (*Lesquerella paysonii*), compact (Cache) beardtongue (*Penstemon compactus*), hoary willow (*Salix candida*), Idaho sedge (*Carex idahoa*), green needlegrass (*Nassella viridula =Stipa viridula*), and red glasswort (*Salicornia rubra*) all have the potential to occur in the project area and all are listed as imperiled by the state of Idaho due to rarity or other factors that make the species vulnerable to extinction. None of these species were observed in botanical surveys conducted for the North Alternative in May and July 2011; however, habitat is present within the corridor of the North Alternative for Payson's bladderpod, hoary willow, Idaho sedge, and green needlegrass. Similarly, none of these species were documented in summer 2007 surveys of the South Alternative. However, additional follow-up surveys will be conducted in spring/summer 2013 to assess any new occurrences of these species.

Table 3-11. Special Status Plant Species and Potential to Occur within the North and South Alternative Corridors

Species	ESA Status[1]	USFS R4 Status[2]	BLM Status[3]	State Status[4]	Habitat Requirements	Potential for Occurrence: North Alternative	Potential for Occurrence: South Alternative
Ute ladies'-tresses	FT (Not known to occur in Caribou County)	None	Type 1	S1	Sub-irrigated, alluvial soils along streams and rivers and their floodplains, including abandoned river channels, wet meadows, and open seepy areas (IDFG 2011c).	Low	Low
Whitebark pine	C	None	None	None	Cold, windy, high elevation or high latitude sites. In Idaho found at elevations between 7,300 and 10,500 feet (USFS 2012).	None	None
Payson's bladderpod	None	S	None	S2	Ridgelines and on slopes in openings in sagebrush and forest stands. Gravelly, skeletal soils (Moseley 1996).	Low	Moderate
Compact (Cache) beardtongue	SC	S	None	S2	Bedrock, outcrops or cliff bands, usually rooted in crevices, mostly subalpine to alpine (Mancuso and Moseley 1990a).	Low	Moderate
Starveling milkvetch	None	S	Type 2	S2	Barren, eroding shale substrata of the Twin Creek Limestone formation (Mancuso and Moseley 1990b).	Low	Low
Hoary willow	None	None	Type 4	S2	Bogs, fens, marshes, pond edges, and seepage areas (Walford et al. 1997).	Moderate	Low
Idaho sedge	None	None	Type 2	S2	Moist mountain meadows, on border between wet meadow, emergent wetlands and sagebrush-steppe vegetation (Mancuso and Severud 2004).	Moderate	Low
Green needlegrass	None	None	Type 4	S2	Grasslands and sagebrush slopes and adapted to a wide range of soil textures (Herzman et al. 1959).	Moderate	Moderate

Species	ESA Status[1]	USFS R4 Status[2]	BLM Status[3]	State Status[4]	Habitat Requirements	Potential for Occurrence: North Alternative	Potential for Occurrence: South Alternative
Red glasswort	None	None	Type 4	S2	Moist or seasonally moist streambanks and meadows that are high in salt concentrations with open and exposed soils (Jankovsky-Jones 2001).	Low	Moderate

[1] USFWS Classification (USFWS 2011): FE=Federal Endangered, FT= Federal Threatened, SC = Species of Concern

[2] USFS C-TNF Status (USFS 2011a), S=Sensitive; R=Rare, W=Watch list

[3] BLM Special Status Species Types (IDFG 2011c): Type 1 - Species federally identified as threatened, endangered, proposed, candidate, or species designated by the BLM State Director as sensitive. Type 2 - Species that have a high likelihood of being listed in the foreseeable future due to their global rarity and significant endangerment factors. Type 3 - Species that are globally rare or very rare in Idaho, with moderate endangerment factors. Their global or state rarity and the inherent risks associated with rarity make them imperiled species. Type 4 - Species that are generally rare in Idaho with small populations or localized distribution and currently have low threat levels. However, due to the small populations and habitat area, certain future land uses in close proximity could significantly jeopardize these species.

[4] Idaho State Status (IDFG 2011c): S1 = critically imperiled because of extreme rarity or because of some factor of its biology making it especially vulnerable to extinction; S2 = imperiled because of rarity or because of other factors demonstrably making it vulnerable to extinction; S3 = rare or uncommon, but not imperiled; S4 = not rare and apparently secure, but with cause for long-term concern; S5 = demonstrably widespread, abundant, and secure.

Noxious Weeds

Idaho Code (Title 22, Chapter 24, Noxious Weeds) designates 64 species of noxious weeds; this law is implemented by administrative rules established under the Idaho Administrative Procedures Act (IDAPA) (IDAPA 02, Title 06, Chapter 22, Noxious Weed Rules). The administrative rules place each noxious weed species into one of three categories. Each category has specific management requirements associated with detection, control, and/or containment of the given species. The categories are as follows:

- **Early Detection and Rapid Response—**Plants in this category must be reported to the Idaho State Department of Agriculture within 10 days of observation. Eradication must begin in the same season in which the weed is found.
- **Statewide Control—**Plants in this category may already exist in some parts of the state. In some areas of the state, control or eradication may be possible, and a plan must be established that will reduce population levels within 5 years.
- **Statewide Containment—**Plants in this category already exist in the state. New or small infestations can be reduced or eliminated, while established populations may be managed as determined by the local weed control authority.

The project area is within the Highlands Cooperative Weed Management Area (HCWMA). Major weed concerns in this area are Dyer's woad (*Isatis tinctoria*), leafy spurge (*Euphorbia esula*), perennial pepperweed (*Lepidium latifolium*), and yellow toadflax (*Linaria vulgaris*) (HCWMA 2009). Major efforts are being made to control these weeds in the HCWMA, including chemical treatment, biological control, and GPS mapping efforts.

The corridor of the North Alternative was surveyed for the presence of invasive species during botanical inventory surveys conducted in May and July 2011. The following noxious weed species have been documented within the corridor of the North Alternative:

- **Canada thistle (*Cirsium arvense*)—**Canada thistle is listed as a statewide containment species in Idaho. It is a tall, herbaceous perennial plant that reproduces from seeds and via an extensive underground root system (Prather et al. 2010). It is widespread in Idaho and throughout the western United States, and throughout the project area. This species is found along access roads and other disturbed habitats, and at the margins of wetlands, swales, and streamside habitats where soils stay moist.
- **Leafy spurge—**Leafy spurge is listed as a statewide containment species in Idaho. It is an erect perennial that grows up to 2.5 feet tall, with roots that can exceed 20 feet in length (Prather et al. 2010). In Idaho, this species typically invades rangeland habitats, pastures, roadsides, and riparian areas. One small population (approximately 100 square feet) of leafy spurge was documented in the vicinity of a livestock pond on state-owned land within the North Alternative corridor.
- **Yellow toadflax—**Yellow toadflax is listed as a statewide containment species in Idaho. It is an erect perennial that grows up to 3 feet tall, with vertical creeping

roots (Prather et al. 2010). In Idaho, this species typically grows in rangeland, pastures, cultivated fields, gardens, and roadsides. A portion of the North Alternative corridor crosses C-TNF lands where toadflax has been documented (Parker 2011, personal communication).

The presence of invasive species in the South Alternative was documented during other field inventories conducted along the corridor for the South Alternative, including several species of state-listed Control and Containment noxious weeds. These include the following species:

- **Canada thistle—**Canada thistle was found in the bottom of swales, drainages, and other areas where soil stays moist and in upland areas near certain wetlands
- **Musk thistle (*Carduus nutans*)—**Musk thistle is an Idaho control status species. It is a biennial thistle that reproduces from seeds. One plant can produce up to 20,000 seeds, of which two-thirds are typically viable. It was found in only a few places in disturbed sagebrush sites in the corridor for the South Alternative.
- **Spotted knapweed (*Centaurea maculosa*)—**Spotted knapweed is an Idaho containment species. It is a biennial that produces up to 25,000 seeds per plant, and these may remain in the soil for up to 8 years. Knapweed was found in abundance in one upland area of the South Alternative corridor.

Additional noxious weeds occurrences will be documented if identified during spring/summer 2013 special status species and old growth surveys.

Old-growth Forest

As described earlier, the project area crosses forested portions of C-TNF. The 2003 CNF RFP (USFS 2003a) established standards for vegetation management such that 15 percent of the forested acres within each 5th level Hydrologic Unit Code (HUC) meet or are actively managed to attain old-growth characteristics. The 2003 CNF RFP states that the definition of old-growth characteristics by forest type should be consistent with the guidelines established in Characteristics of Old-growth Forests in the Intermountain Region (Hamilton 1993).

Forest inventory surveys were conducted within the project corridor for the North Alternative to determine if any of the stands met the criteria for old-growth forests as defined in the 2003 CNF RFP (USFS 2003a). Survey results indicate the forest stands within the project corridor for the North Alternative do not meet Region 4 old-growth criteria. Similar surveys will be conducted within the project corridor for the South Alternative during spring/summer 2013.

Alternative Route Options

North Alternative Route Options

The Long Valley Road Option is approximately 7 miles long, resulting in an overall route that is 0.6 mile longer than the North Alternative. This area is predominantly cultivated land, with some native grass, sagebrush, aspen, and conifer communities.

The North Highland Option would cross primarily sagebrush- and grassland-dominated plant communities, with some aspen- and conifer-dominated plant communities present.

South Alternative Route Options

Options 1 through 4 would cross similar plant communities to those described above. Options 3 and 4 would cross a greater area of cultivated and grazing lands.

3.4.2 Environmental Consequences of the North Alternative

Long-term impacts on vegetation would occur from the loss of vegetation for permanent access roads, structure footing installation, forested vegetation removal within the project corridor, counterpoise installation, and the use of pulling sites. Short-term impacts on vegetation communities would occur from temporary vegetation removal, trampling by workers and vehicles, and soil compaction from vehicles and construction equipment at structure construction sites, temporary access roads, and pulling sites. Indirect impacts on vegetation could include the potential for invasive species to colonize disturbance areas, the potential for changes in local microclimates associated with vegetation removal and increased sunlight and/or soil compaction, and habitat fragmentation.

Vegetation Communities

The majority of the corridor of the North Alternative would cross grass- and sagebrush-dominated vegetation communities with no tall-growing vegetation which would result in approximately 75.5 acres of native vegetation being removed or crushed due to construction equipment; structure installation and access road construction (see Table 3-12). Additional vegetation would be temporarily crushed or removed at pulling sites located along the ROW. The impact on these vegetation communities would be ***low*** and short term because these temporarily disturbed areas would be restored to their original contours following installation, and would be revegetated. Additionally, grass- and sagebrush-dominated vegetation communities have the potential to be reestablished within two growing seasons.

Approximately 33.4 acres of aspen- and conifer-dominated vegetation communities at structure installation sites would be cleared for pole, counterpoise installation and access road construction and would be considered a long-term, direct impact as vegetation within the ROW would be maintained as low-growing vegetation (see Table 3-12). The North Alternative would also require removal of approximately 72.1 acres of trees or other tall growing vegetation within the transmission line ROW for the life of the line. In addition, trees outside of the ROW that have the potential to fall or grow close enough to the conductors to cause a flashover (danger trees) would be removed. Impacts on aspen- and conifer-dominated vegetation communities would be ***moderate*** because permanent tree removal would not only impact the trees, but could also change the understory vegetation, which tends to be shade tolerant species that may not survive exposure to full sun.

Table 3-12 summarizes the impacts on vegetation community from construction and operation of the North Alternative

Table 3-12. Vegetation Community Impacts within the North Alternative Corridor

Vegetation Communities		Short Term (acres)[1]	Long Term (acres)		
			Permanent Loss[2]	Clearing Conversion[3]	Total
Native vegetation communities	Sagebrush-dominated	14.9	53.4	0.0	**53.4**
	Mountain shrub–dominated	0.1	0.8	0.0	**0.8**
	Grass-dominated	3.6	22.1	0.0	**22.1**
	Aspen-dominated	1.8	11.8	27.0	**38.8**
	Conifer-dominated	4.3	21.6	43.2	**64.8**
	Wetlands	0.4	0.8	0.0	**0.8**
	Basalt outcrops with native vegetation	0.5	0.1	0.0	**0.1**
Total		**25.6**	**110.6**	**70.2**	**180.8**
Other Vegetation Communities	Seeded grasslands and agricultural and non-vegetated lands	6.6	30.4	0.0	30.4
Total		**6.6**	**30.4**	**0.0**	**30.4**

[1] Short-term impacts are related to trampling or crushing or where the impacted vegetation has the potential to be reestablished within two growing seasons.

[2] Permanent loss represents vegetation that would be permanently removed for the placement of structure footings and permanent access roads. The diameter of each leg of the H-frame would be approximately 2 feet, which translates to approximately 6.3 square feet of impact per structure, and a total of 1,400 square feet (0.03 acre) of impact.

[3] Clearing conversion represents areas that would remain vegetated; however, they would be converted from forested communities to low-growing vegetation and maintained.

Approximately 1.7 acres of other native vegetation communities would be permanently lost through structure installation and access road construction: a ***low*** impact.

Approximately 6.8 acres of tilled agricultural lands would be permanently lost from construction of the Hooper Springs Substation. The remaining 23.6 acres of non-native vegetation communities would impacted by structure installation and access road installation. Relative to the overall quantity of agricultural vegetation within the area, the North Alternative would result in a ***low*** impact on non-native vegetation communities. Construction at Lanes Creek Substation would take place within the boundaries of the existing substation, so ***no*** impact on vegetation would occur.

The necessary staging areas (to store materials, house a small office trailer, and park vehicles) would be located on already developed areas, either paved or previously graded parking lots so ***no*** to ***low*** impacts on vegetation would occur. Vegetation impacts would be limited to possible mowing or trampling of highly disturbed grass- and sagebrush- dominated communities. The staging areas would be about 5 to 15 acres and would be identified prior to construction.

In addition to the direct impacts discussed above, construction of the North Alternative could also result in impacts such as habitat fragmentation, noxious weed proliferation, and soil compaction. Tree removal could cause habitat fragmentation and edge effects that would reduce habitat suitability for plant species that grow in non-edge forest habitats. When canopy trees are removed, understory plants are exposed to increased sunlight and different microclimatic conditions. This would result in a change in the vegetative composition. Some plants would die off, some would experience temporary stresses or would become less dominant, and others would have increased competitive advantage and, therefore, would increase their relative dominance. In some cases, this change in conditions and subsequent plant development could lead to an overall reduction in the diversity of plant species at the site. Tree removal in dense forest could also cause trees at the edge of the cut to be more susceptible to blow down, because their growth form is not developed for the increased stresses at the forest edge. Soil disturbance associated with vegetation removal could also lead to increased potential for the spread of noxious weeds. Soil compaction caused by construction vehicles and equipment could reduce soil suitability for many native plant species, and could also result in increased potential for noxious weeds to proliferate. Noxious weeds threaten the existence of most native plants and greatly reduce plant diversity.

Impacts on vegetation could occur during operation and maintenance of the North Alternative. Vegetation maintenance activities that occur along the proposed ROW include mechanical or chemical control of vegetation. Maintenance activities would create impacts by trampling vegetation in work areas around structures or removing vegetation in the ROW. Additional danger trees would be identified in the future for removal, which would have similar impacts as described above, but limited in scope to small areas. Impacts from maintenance activities would be ***low***.

Special Status Plant Species

There are no documented occurrences of any special status plant species within the project corridor of the North Alternative. In addition, no special status plant species were observed during botanical inventory surveys conducted in May and July 2011.

Vegetation clearing associated with structure installation and access road construction would impact potentially suitable habitat for special status plant species. Specific habitats impacted include riparian areas potentially suitable for hoary willow. Wetland- and mountain shrub-dominated vegetation communities on C-TNF lands are potentially suitable for Idaho sedge and sagebrush-dominated communities, and are potentially suitable for green needlegrass. However, relative to the overall quantity of these vegetation communities in the project area, project construction of the North Alternative would result in a ***low*** impact on potentially suitable habitat.

As described below, operation of the North Alternative could result in the spread or introduction of invasive species or noxious weeds in potentially suitable habitat, which would reduce habitat suitability and increase competition. However, impacts on vegetation communities that are potential suitable habitat for special status plant species have been minimized through project design to the extent possible, resulting in a ***low*** impact.

Noxious Weeds

Soil disturbance and vegetation removal associated with access road and structure construction have the potential to increase the proliferation of noxious weed species. Noxious weeds could displace native species through increased competition for resources, and could negatively impact the composition and function of native vegetation communities. Field surveys documented two noxious weed species, Canada thistle and leafy spurge, within the project corridor of the North Alternative. However, yellow toadflax is also known to occur in the area. Canada thistle is distributed throughout the project corridor, but is most concentrated in disturbed areas and along the margins of wetland and riparian areas. Surveys documented only one small population of leafy spurge within the proposed ROW in the vicinity of a livestock pond on state-owned land. Yellow toadflax has been documented on C-TNF lands near existing power line ROWs. Project construction could spread the known populations of noxious weeds that are present within the project corridor of the North Alternative because soil disturbance and native vegetation removal could provide opportunities for invasive species to proliferate. Canada thistle is already widespread within the region, and is also distributed throughout the project area; therefore, construction of the North Alternative is not likely to greatly increase the presence of Canada thistle. There is little potential for increased spread of any statewide control or early detection/rapid response species, as none of these species have been encountered in the project area. Vegetation maintenance activities within the project corridor of the North Alternative would control the small population of leafy spurge and other noxious weeds. For this reason, impacts from the spread of noxious weed populations would be ***low***.

North Alternative Route Options

Long Valley Road Option

The Long Valley Road Option would primarily impact agricultural lands with minor disturbances to sagebrush-dominated vegetation. Although this routing option would increase the length of the North Alternative by 0.6 mile, the impacts are primarily on non-native vegetation communities, which are abundant in the project area. Similar to the impacts described above, impacts on native communities would be ***low***.

North Highland Option

The North Highland Option would result in the removal of less sagebrush- and grass-dominated habitat and more conifer- and aspen-dominated habitat compared to the North Alternative. Although this option would increase the length of the North Alternative by approximately 2 miles, impacts on these native communities would be similar to those described for the North Alternative (***low*** to ***moderate***).

3.4.3 Environmental Consequences of the South Alternative

As with the North Alternative, impacts on vegetation from the South Alternative would occur from the loss of vegetation for permanent access roads, structure footing installation, forested vegetation removal within the corridor, counterpoise installation, and the use of pulling sites. Short-term impacts and indirect impacts on vegetation communities would be the same as those described for the North Alternative.

Vegetation Communities

The majority of the corridor of the South Alternative would cross grass- and sagebrush-dominated vegetation communities with no tall-growing vegetation which would result in approximately 65.2 acres of native vegetation being removed or crushed due to construction equipment and structure installation and access road construction (see Table 3-13). Additional vegetation would be temporarily crushed or removed at pulling sites located along the ROW. The impact on these vegetation communities would be ***low*** and short term because these temporarily disturbed areas would be restored to their original contours following installation, and would be revegetated. Additionally, grass- and sagebrush-dominated vegetation communities have the potential to be reestablished within two growing seasons.

Approximately 13.7 acres of aspen- and conifer-dominated vegetation communities at structure installation sites would be cleared for structure and counterpoise installation and access road construction and would be considered a long-term, direct impact as vegetation within the ROW would be maintained as low-growing vegetation (see Table 3-13). The South Alternative would also require removal of approximately 48.9 acres of trees or other tall growing vegetation within the transmission line ROW for the life of the line. In addition, trees outside of the ROW that have the potential to fall or grow close enough to the conductors to cause a flashover (danger trees) would be removed. Impacts on aspen- and conifer-dominated vegetation communities would be ***moderate*** because permanent tree removal would not only impact the trees, but could also change the understory vegetation, which tends to be shade tolerant species that may not survive exposure to full sun.

Approximately 0.5 acre of other native vegetation communities would be permanently lost through structure installation and access road construction: a ***low*** impact.

Construction of the Hooper Springs Substation would result in the same permanent loss of 6.8 acres of tilled agricultural lands as the North Alternative. The remaining 9.7 acres of non-native vegetation communities would impacted by structure installation and access road installation. Relative to the overall quantity of agricultural vegetation within the area, the South Alternative would result in a ***low*** impact on non-native vegetation communities.

Table 3-13 summarizes the impacts on vegetation community from construction and operation of the South Alternative.

Table 3-13. Vegetation Community Impacts within the South Alternative Corridor

Vegetation Communities		Short Term (acres)[1]	Long Term (acres)		
			Permanent Loss[2]	Clearing Conversion[3]	Total
Native vegetation communities	Sagebrush-dominated	15.8	24.9	0.0	**24.9**
	Mountain shrub–dominated	0.4	0.4	0.00	**0.4**
	Grass-dominated	27.6	40.3	0.0	**40.3**
	Aspen-dominated	1.2	2.6	6.3	**8.9**
	Conifer-dominated	3.2	11.1	42.6	**53.7**
	Wetlands	0.1	0	0.00	**0.00**
	Basalt outcrops with native vegetation	0	0.1	0.00	**0.1**
Total		**48.3**	**79.4**	**48.9**	**128.3**
Other Vegetation Communities	Seeded grasslands and agricultural and non-vegetated lands	4.7	16.5	0.00	16.5
Total		**4.7**	**16.5**	**0.0**	**16.5**

[1] Short-term impacts are related to trampling or crushing or where the impacted vegetation has the potential to be reestablished within two growing seasons.

[2] Permanent loss represents vegetation that would be permanently removed for the placement of structure footings and permanent access roads. The diameter of each leg of the H-frame would be approximately 2 feet, which translates to approximately 6.3 square feet of impact per structure, and a total of 1,400 square feet (0.03 acre) of impact.

[3] Clearing conversion represents areas that would remain vegetated; however, they would be converted from forested communities to low-growing vegetation and maintained.

Similar to the North Alternative, the staging areas that would be needed for the South Alternative (to store materials, house a small office trailer, and park vehicles) would be located on already developed areas, either paved or previously graded parking lots so ***no*** to ***low*** impacts on vegetation would occur. Vegetation impacts would be limited to possible mowing or trampling of highly disturbed grass- and sagebrush- dominated communities. The staging areas would be about 5 to 15 acres and would be identified prior to construction.

In addition to the indirect impacts discussed above, construction of the South Alternative would also result in impacts such as habitat fragmentation, noxious weed proliferation, and soil compaction. Impacts from tree removal, including reduced plant diversity and increased susceptibility to blow down would be the same as those described for the North Alternative.

Impacts on vegetation could occur during operation and maintenance of the South Alternative. Vegetation maintenance activities that occur along the proposed ROW would be the same as those described for the North Alternative. Impacts from maintenance activities would be ***low***.

Special Status Plant Species

There are no documented occurrences of any special status plant species within the corridor of the South Alternative. Additional surveys for special status species are planned for spring/summer 2013.

Vegetation clearing associated with structure installation and access road construction would impact potentially suitable habitat, if present, for special status plant species. Specific habitats impacted include riparian areas potentially suitable for hoary willow. Wetland- and mountain shrub-dominated vegetation communities on C-TNF lands are potentially suitable for Idaho sedge and sagebrush-dominated communities, and green needlegrass. However, relative to the overall quantity of these vegetation communities in the project area, project construction of the South Alternative would result in a ***low*** impact on potentially suitable habitat.

As described below, operation of the South Alternative could result in the spread or introduction of invasive species or noxious weeds in potentially suitable habitat, which would reduce habitat suitability and increase competition. However, impacts on vegetation communities that are potential suitable habitat for special status plant species have been minimized through project design to the extent possible, resulting in a ***low*** impact.

Noxious Weeds

Soil disturbance and vegetation removal associated with access road and structure construction have the potential to increase the proliferation of noxious weed species. Noxious weeds could displace native species through increased competition for resources, and negatively impact the composition and function of native vegetation communities. Previous field inventories conducted along the corridor for the South Alternative noted Canada thistle, musk thistle, and spotted knapweed in the area. Project construction could spread the known populations of noxious weeds that are present within the project corridor of the South Alternative because soil disturbance and native vegetation removal could provide opportunities for invasive species to proliferate. Canada thistle is already widespread within the region, and is also distributed throughout the project area; therefore, construction of the South Alternative is not likely to greatly increase its presence. Vegetation maintenance activities within the corridor of the South Alternative would control the small populations of musk thistle, spotted knapweed, and other noxious weeds. For this reason, impacts from the spread of noxious weed populations would be ***low***.

South Alternative Route Options

Option 1

Option 1 could impact slightly more vegetation than the South Alternative, as the option would cross approximately 8.2 additional acres compared to the South Alternative. Impacts on aspen- and mountain shrub-dominated habitat would be the same as the South Alternative (***moderate***). Impacts on sagebrush and conifer-dominated habitat would be less under Option 1 (approximately 25 fewer acres of sagebrush and 4 fewer acres of conifer than the South Alternative). Impacts on special status plant species and from noxious weeds would be the same as those under the South Alternative (***low***).

Option 2

Option 2 could impact slightly less vegetation than the South Alternative, because the option would cross approximately 2.1 fewer acres compared to the South Alternative. Impacts on aspen- and mountain shrub-dominated habitat would be the same as the South Alternative (***moderate***). Impacts on sagebrush-dominated habitat would be slightly less under this Option 2, while impacts on grass-dominated habitat would be greater than the South Alternative. Impacts on special status plant species and from noxious weeds would be the same as those under the South Alternative (***low***).

Option 3

Option 3 could impact slightly more vegetation than the South Alternative, as the option would cross approximately 22.0 additional acres compared to the South Alternative. This routing option has fewer impacts than the South Alternative to sagebrush-dominated habitat because it travels north from the proposed Hooper Springs substation through agricultural lands and avoids several sagebrush areas, but would cross more basalt outcrops with native vegetation. In addition, about 19 fewer acres of aspen-dominated habitat and 7 fewer acres of conifer-dominated habitat would be impacted under Option 3 (along the base of treed slopes at the entrance of the C-TNF). Impacts on special status plant species and from noxious weeds would be the same as those described for the South Alternative (***low***).

Option 4

Option 4 could impact slightly more vegetation than the South Alternative, as the option would cross approximately 10.7 additional acres compared to the South Alternative. Similar to Option 3, Option 4 would cross more basalt outcrops with native vegetation, but has fewer impacts than the South Alternative to sagebrush-dominated habitat because the it travels north from the Hooper Springs Substation site through agricultural lands and avoids several sagebrush areas. Impacts on special status plant species and from noxious weeds would be the same as those described for the South Alternative (***low***).

3.4.4 Mitigation

The following mitigation measures have been identified to reduce or eliminate vegetation impacts from the Project.

- Use BMPs to limit erosion and the spread of noxious weeds.
- Use appropriate seed mixes, application rates, methods, and timing to revegetate disturbed areas following completion of construction activities.
- Monitor reseeded areas for adequate growth and implement contingency measures as necessary.
- Consult with USFWS concerning any ESA-listed plant species identified in the project corridor during follow-up surveys, and implement any mitigation measures (such as feasible and appropriate avoidance measures) identified as a result of these consultations.
- If other special status plant species are identified during follow-up surveys, develop appropriate avoidance measures to the extent possible.
- Identify noxious weed populations for construction crews so these populations can be avoided when possible. Cooperate with private, county, state, and federal landowners to reduce the introduction and spread of noxious weeds, including locating vehicle wash or blow stations as appropriate to avoid the spread of noxious weeds.
- Follow the guidelines in the noxious weed strategies used by land managers on state and federally managed land. Seed all disturbed areas as soon as possible with noxious weed-free seed (as certified by the state) to stabilize the sites. On C-TNF, use a seed mixture approved by the forest officer. On BLM lands, use a seed mixture approved by the BLM botanist. On state-owned lands, use a seed mixture approved by the district biologist.
- Cooperate with private, county, state, and federal landowners to treat noxious weeds along access roads that would be used to bring construction equipment into the project corridor to reduce the introduction and spread of noxious weeds and noxious weed seeds.
- Clean equipment using wash or blow stations before entering the project corridor, as needed.
- Save topsoil removed for structure and temporary spur road construction and use on-site for restoration activities to promote regrowth from the native seed bank in the topsoil, where possible.
- Use weed-free straw for erosion control during construction and restoration activities.
- Apply herbicides according to the BPA Transmission System Vegetation Management Program EIS (DOE/EIS-0285) and label recommendations to ensure protection of surface water, ecological integrity, and public health and safety.

- Retain existing low-growing vegetation where possible to prevent sediment movement off site.
- Avoid snag and large tree removal to the extent possible.
- Encourage workers to cut or crush vegetation in-place, rather than blade, in temporary disturbance areas in order to maximize the ability of plant roots to keep soil intact and prevent sediment movement off-site.
- Locate staging areas in previously disturbed or graveled areas to minimize soil and vegetation disturbance where practicable.
- Leave erosion and sediment control devices in place until all disturbed sites are revegetated and erosion potential has returned to pre-project conditions.
- Limit ground-disturbing activities to structure sites, access roads, staging areas, and the proposed substation site (see Section 3.1.4, Land Use).
- Leave undisturbed plants less than 4 feet in height undisturbed within the 100-foot-wide ROW where it would not interfere with the safe operation of the transmission line (see Section 3.3.4, Visual Resources).
- Restore compacted cropland soils as close as possible to pre-construction conditions using tillage (see Section 3.5.4, Geology and Soils).
- Design temporary and permanent access roads to control runoff and prevent erosion (see Section 3.5.4, Geology and Soils).
- Minimize the project ground disturbance footprint; particularly in sensitive areas (see Section 3.6.4, Water Resources, Floodplains, and Wetlands).
- Consult with the appropriate state or federal land management agency (C-TNF, BLM, or IDFG) concerning any special status species (see Section 3.7.4, Wildlife).
- Minimize ground-disturbing activities, particularly in sensitive habitats (see Section 3.7.4, Wildlife).
- Avoid manipulating or altering sagebrush stands that are suitable as grouse nesting habitat during the nesting period (see Section 3.7.4, Wildlife).
- Avoid construction within big game winter range habitat during sensitive wintering periods. Within big game winter ranges, seed disturbed areas with preferred big game forage species (see Section 3.7.4, Wildlife).
- Identify wetlands and other sensitive areas prior to initiating construction (see Section 3.7.4, Wildlife).
- Limit road improvements to the minimum amount necessary (see Section 3.11.4, Transportation).
- Prepare and implement Spill Prevention and Response Procedures (see Section 3.13.4, Public Health and Safety).

- Initiate discussions with local fire districts and work with the districts and other appropriate entities to develop fire and emergency response plans (see Section 3.13.4, Public Health and Safety).

3.4.5 Unavoidable Impacts Remaining after Mitigation

Unavoidable impacts on vegetation would occur as vegetation is removed for access road development and transmission line siting. Low-growing vegetation would be allowed to regrow within the ROW; however, forest clearing in the ROW would not return to pre-project conditions, but would remain cleared and vegetated with low-growing species.

3.4.6 No Action Alternative

Under the No Action Alternative, the Project would not be built, so the impacts on vegetation related to the construction, operation, and maintenance of the transmission lines would not occur.

3.5 Geology and Soils

3.5.1 Affected Environment

The project area extends from the northern portion of the Basin and Range physiographic province in Idaho eastward into the Snake River Plain of the Columbia Plateau physiographic province (USGS 2003). Topography is mostly mountain ranges that parallel low, broad valleys and foothills with elevations within the project corridor ranging from about 1,000 feet above mean sea level (msl) to 9,000 feet above msl (BPA 2009). Mountain ranges and foothills in southeastern Idaho are generally composed of sedimentary rocks, including thick marine deposits. The valleys are filled-in sediments deposited by water and gravity underlain by volcanic rocks that include basalt in some places (USGS and USFS 1977). Soils in the area generally support agriculture, grazing lands, wetlands, and forested lands.

Geology

The project area is also located within the Western Phosphate Field, a 350,000-square kilometer area in the northern Rocky Mountains which includes the southeastern Idaho phosphate resource area. The principal mineral resource of southeastern Idaho is phosphate rock. Phosphate mining has occurred in the project area since the early 20th century. Other mineral resources in the project corridor include lime, hydromagnesite, cement materials, road metal, building stone, gravel, salt, sulfur, lead, copper, gold, silver, gypsum, manganese, and potassium nitrate (Mansfield 1927). Elevated concentrations of selenium occur in portions of southeastern Idaho. The source of the elevated selenium is phosphate rock.

Review of U.S. Geologic Survey (USGS) Geologic Mapping indicates that neither the corridor for the North Alternative nor the corridor for the South Alternative traverses any mapped landslide complexes (Adams, Breckenridge, and Othberg 1991; Oriel and Platt 1980). The corridor for the South Alternative passes within approximately 1,500 feet of two identified landslide deposits near the Blackfoot River Narrows area along Blackfoot River Road. No faults were identified in the corridor for either the North Alternative or the South Alternative based on review of the USGS Quaternary Fault and Fold Database (USGS 2006b). One Quaternary scarp (Bear Lake fault) with a high potential for activity, is located approximately 40 miles south of the southern-most portion of the project area (Othberg 1984). Liquefaction is the process by which certain sediments undergo a complete loss of strength during strong earthquake shaking. Sediments sensitive to liquefaction are saturated fine sands and silty sands. The Idaho Geologic Survey currently does not have a liquefaction susceptibility map available for the project corridor, but there is potential for liquefaction given the presence of sands and other unconsolidated sediments in river valleys (Othberg 1984).

Soils

Soils on mountains and ridges in the project area formed on steep slopes with sedimentary parent material. Soils are moderately deep to very deep (20 inches or greater), with some shallow soils on the ridges (less than 20 inches) (C-TNF 2002a). Loess derived soils in the valleys and foothills are typically very deep and well drained. Soils formed in the drainages are generally very deep, influenced by moisture during at least some period of the year with some areas of hydric soils.

Soils in the project area were investigated using the State Soil Geographic Database (STATSGO) and the CNF Soil Survey (USFS 1990) (see Appendix E for a description of the STATSGO and CNF Soil Survey soil map units). STATSGO data are available for the entire project area (USDA, 1977 and 1981). For those portions of the project area crossing C-TNF lands, the CNF Soil Survey was used in combination with additional on-site, field soil characterizations conducted in support of project planning.

Subsidence is the gradual or rapid lowering of the ground surface that takes place when the soil surface is depressed or becomes dried out and can occur when the groundwater table is lowered. In southeast Idaho subsidence occurs from (1) the dissolution of limestones and dolomites, which results in karst topography characterized by sink holes and underground drainage; (2) sinks in volcanic fields; (3) active tilting, warping, or basining due to crustal movement along faults or folds; and 4) sinks that form when subsurface voids are created by compaction and ejection of subsurface materials during vigorous earthquake vibration (Othberg 1984). These types of terrain (limestones/dolomites and volcanics) are present in the project area. Subsidence could occur in localized instances due to underground mining in the area, although subsidence has not been documented to date (Othberg 1984).

Prime Farmland

Prime farmland and farmland of statewide importance are special categories of highly productive cropland that are recognized and described by the Natural Resources Conservation Service (NRCS). Prime farmland is land that has the best combination of physical and chemical characteristics for producing crops. Soils that do not meet the prime farmland category but are still recognized for their productivity by states may qualify as farmland of statewide importance. In either case, cropping practices such as irrigation or drainage may be required for the soil to meet its production potential. Farmland in the project area includes cultivated fields and seeded grasslands that could be used for grazing or hay production (see Section 3.1, Land Use). The corridor for the North Alternative traverses soils identified as prime farmland in the NRCS 2012 draft soil data, provided the area is irrigated (Kukachka 2012, personal communication). The NRCS draft data indicates that prime farmland in the vicinity of the North Alternative corridor is found north of the proposed Hooper Springs Substation site (between line mile 1 and 2), along the southeast and east side of the Blackfoot Reservoir (between line mile 11 and 20), and north of the alternative corridor crossing of Gravel Creek (between line mile 26 and 28). The corridors for the South Alternative and route options cross areas of prime farmland in the western portion of the alternative corridor, between line miles 1 and 11. No farmland of statewide importance is identified within the project area.

Alternative Route Options

North Alternative Route Options

Topography along the Long Valley Road Option consists of valleys and foothills with loess derived soils such as sand and silt loam. A small area of hydric soils is present in the vicinity of the option's north end (at line mile 17). The NRCS draft data indicates that approximately

9.3 acres of prime farmland is found southeast and east of the Blackfoot Reservoir along the Long Valley Road Option (between line mile 11 and 17).

Topography along the North Highland Option consists of foothills with deep, well-drained silt loam soils. No hydric soils or prime farmland are crossed by this route option.

South Alternative Route Options

Option 1 generally follows the corridor of the South Alternative, with the majority of the deviations from the South Alternative remaining within 0.5 mile and affecting comparable geology, soils, and topography. One exception occurs between line miles 3 and 5, where Option 1 continues easts and loops around the south and east side of the city of Conda. This portion of Option 1 does not cross prime farmland but crosses approximately 0.6 mile of active phosphate mines owned and operated by the J.R. Simplot Company (Simplot).

The geology, soils, and topography along Option 2 are similar to those encountered under the South Alternative. At line mile 19, Option 2 extends slightly north and follows a route adjacent to Option 1 for approximately 0.75 mile. Existing geology and soils in this portion of Option 2 are comparable to those present under Option 1.

Option 3 heads directly north of the proposed Hooper Springs Substation, similar to the corridor of the North Alternative, before heading east at China Hat Road to cross the Blackfoot River and rejoin the corridor for the South Alternative. The soils encountered along this portion of Option 3 consist of deep to very deep, well-drained silt loam soils, with no hydric soils present. The NRCS draft data indicate that approximately 3,290 acres of prime farmland are be found within 0.25 mile of Option 3 corridor and approximately 126 acres of prime farmland are located within the transmission line ROW. These areas are located north of the proposed Hooper Springs Substation and north and east of the Blackfoot River between line miles 1 and 11. The remaining portion of Option 3 travels closely adjacent to the South Alternative corridor, remaining within 0.5 mile and passing through comparable soils and topography. Between line mile 17 and line mile 18, Option 3 extends north and parallel to the South Alternative through the inactive Wooley Valley Mine. After crossing the South Alternative corridor at line mile 18, Option 3 continues south of and generally parallel to the South Alternative, and travelling about 1.3 miles through the North Maybe Investigation Area.

Option 4 crosses similar geology, soils, and topography as Options 1 and 3. NRCS draft data indicate that approximately 2,081 acres of prime farmland are found within 0.25 mile of the Option 4 corridor, while approximately 77 acres of prime farmland are located within the proposed transmission line ROW.

3.5.2 Environmental Consequences of the North Alternative

Geology

Portions of the corridor for the North Alternative located in river valleys have areas of sands and other unconsolidated sediments that may be susceptible to liquefaction. However, the low risk of seismic activity in the project area reduces the likelihood of soil liquefaction. Generally, transmission structures are likely to survive settlement associated with liquefaction with only minor structural damage. Liquefaction hazard areas would be identified prior to construction based on anticipated soil and groundwater conditions. Several liquefaction mitigation options are available, including avoiding areas susceptible to liquefaction, soil densification, and deep footings. Mitigation would be considered on a site by site basis. While the development of roads has the potential to cause mass wasting (e.g., erosion or landslides), road grades would be varied depending on the erosion potential of the soil and roads would be rocked where needed for dust abatement, stability, load bearing, and seasons of use. Accordingly, impacts related to liquefaction and landslides are expected to be ***low***.

Construction of the North Alternative could require drilling and blasting in areas of shallow soil or where exposed bedrock limits the ability to install structures, counterpoise, or develop access roads. Bedrock in those locations would be excavated, removed, or broken up to allow for construction activities. Areas where exposed bedrock would most likely occur include where the proposed transmission ROW crosses over the Gray's Range north of Henry Peak (between line mile 23 and 26). Installation of transmission structures would require the excavation of holes approximately 10 feet deep for wood pole structures and 15 feet deep for steel pole structures, although dead-end steel pole structures would require concrete footings up to 30 feet deep (see Section 2.2.2, Transmission Lines). Geotechnical investigations, including exploratory borings, would be conducted prior to construction of the line to ensure that excavation would not be deep enough to contact phosphate rock. Therefore, there would be little to no potential for release of selenium during project construction (see Section 3.13, Public Health and Safety). Blasting holes or other excavations would be backfilled with native material from the original excavation.

Soils

Construction of the North Alternative would involve excavation (for structure footings, substation ground mat, equipment, and counterpoise), counterpoise installation, grading and cut-and-fill for roads, tree removal, movement of heavy equipment, and lay-down of materials. All these activities would disturb soils and remove or damage vegetative cover. The exposed soil would be vulnerable to movement off-site through water runoff, wind dispersal, or movement by gravity (soil/rocks rolling down hill). Soil compaction from heavy equipment also contributes to erosion as rainfall is less easily absorbed (increasing runoff) and it is more difficult for plants to grow (creating areas with patchy or no vegetation coverage). Removal of all tall growing vegetation along the transmission line ROW and access roads would increase the potential for erosion because roots help to hold soil in place and vegetation impedes the velocity of surface water flow.

Some soil would be removed from potential use, such as in localized areas around transmission structure footings, road beds, and at the new Hooper Springs Substation. The ground beneath new or improved access roads would be subject to long-term compaction. Where footings and roadways are built on expansive soil, impacts would be greater because more work (e.g., grading, graveling, and more extensive footings) would be required to ensure stability. Roads on steep slopes would be the most likely to cause erosion because ground cover would be removed, soils would be compacted, and drainage patterns could potentially be changed. Proper road design (such as gravelling surfaces, selecting appropriate road locations and grades, and installing water bars or other appropriate drainage) would be essential to help avoid long-term erosion impacts (see Section 3.5.4, Mitigation).

Limiting site disturbance is the single most effective method for reducing erosion. Preserving vegetative cover to the maximum extent feasible helps shield the soil from the elements, slowing runoff velocity and increasing infiltration time, and holding soils in place. Vegetation removal would be limited to the extent possible during construction. Temporary erosion control measures would be maintained until vegetation reestablished and/or permanent erosion control measures were in place. Mitigation measures proposed for construction would reduce soil disturbance and erosion (see Section 3.5.4, Mitigation). Temporary soil impacts would be ***low*** with the implementation of these erosion limiting mitigation measures, which would include implementing a Stormwater Pollution Prevention Plan (SWPPP), designing roads to control runoff and prevent erosion, constructing during the dry season, and other measures to prevent or limit soil impacts.

Soil compaction occurs when soil particles are pressed together by equipment operation or vehicle traffic. When soils are compacted, the pore spaces between soil particles are reduced, thus restricting infiltration and deep rooting, and reducing the amount of water available for plant growth. When infiltration is reduced, runoff may occur and lead to erosion, nutrient loss, and potential water quality problems (NRCS 1996, 2004). Soil water content influences compaction such that the risk is greatest when soils are moist or wet; dry soils are much more resistant to compaction than moist or wet soils (NRCS 1996, 2004). Other factors affecting compaction include the pressure exerted upon the soils (from heavy equipment or vehicles), soil characteristics (organic matter content, clay content and type, and texture), and the number of passes by equipment or vehicle traffic (NRCS 1996).

Soil compaction would occur if heavy equipment or repeated vehicle traffic press soil particles together, especially if the soils are moist or wet. Compaction would be expected where equipment operates off access roads, such as during structure construction, counterpoise installation, and at pulling/tensioning sites. To limit soil compaction, heavy equipment and vehicles would only be operated on access roads and within approved construction footprints and off-road construction would be limited during wet conditions. Implementation of mitigation as described in Section 3.5.4, Mitigation would reduce compaction and long-term impacts on soils would be ***low***.

Permanent loss of prime farmland soils under structure footings and permanent access roads would occur with construction of the North Alternative. Additionally, temporary compaction impacts from heavy machinery would occur on prime farmland soils. However, because the amount of prime farmland soils permanently impacted is minimal (approximately 0.01 acre), the long-term impact would be ***low***. Implementation of mitigation as described in Section 3.5.4, Mitigation, would reduce temporary impacts on prime farmland soils from compaction.

Typical operations and maintenance would have a ***low*** impact on soils. Annual vehicle ground inspections and vegetation maintenance activities could cause some dust, create ruts on wet roads, or disturb vegetation that could expose soil. Where temporary roads would be constructed, maintenance vehicles and equipment may need to drive through fields and could cause temporary soil erosion or compaction. Implementation of mitigation as described in Sections 3.1.4 and 3.5.4 would reduce impacts on soil function.

North Alternative Route Options

Long Valley Road Option

Impacts on soils from the Long Valley Road Option would be similar to impacts described for the North Alternative (***low***); however this option would impact slightly more soils (this option increases the transmission line length by 0.6 mile). Impacts on prime farmland soils under this option would also be similar to those described above (***low***). If hydric soils in line mile 17 of this option are compacted during construction, impacts would be ***low*** to ***moderate*** depending on the area disturbed.

North Highland Option

Impacts on geology and soils from the North Highland Option would be similar to impacts described for the North Alternative (***low***); however the impacts on geology and soils would be slightly less (this option decreases the transmission line length by 0.1 mile). The North Highland Option would have similar soil productivity, prime farmland soil, and geologic impacts as those described above (***low***).

3.5.3 Environmental Consequences of the South Alternative

Geology

Portions of the corridor for South Alternative located in river valleys, along the Blackfoot River, for example, have areas of sands and other unconsolidated sediments that may be susceptible to liquefaction. However, as with the North Alternative, the low risk of seismic activity in the project area reduces the likelihood of soil liquefaction. Liquefaction hazard areas would be identified prior to construction and mitigation would be considered on a site by site basis. Road grades would be varied depending on the erosion potential of the soil, and rock applied where needed for dust abatement, stability, load bearing, and seasons of use. Accordingly, as with the North Alternative, impacts related to liquefaction and landslides under the South Alternative are expected to be ***low***.

As with the North Alternative, construction of the South Alternative could require drilling and blasting in areas of shallow soil or where exposed bedrock limits necessary construction activities. Bedrock in those locations would be excavated, removed, or broken up to allow for construction activities. Areas where exposed bedrock would most likely occur include the area east of the Blackfoot River Narrows area, where the proposed transmission ROW crosses onto C-TNF lands between line miles 19 and 22. Similar to the North Alternative, geotechnical investigations, including exploratory borings, would be conducted prior to construction of the South Alternative to ensure that excavation would not be deep enough to contact phosphate rock. Therefore, there would be little to no potential for release of selenium during project construction (see Section 3.13, Public Health and Safety). Blasting holes or other excavations would be backfilled with native material from the original excavation.

Soils

Construction of the South Alternative would involve the same ground-disturbing activities as the North Alternative, which would disturb soils and remove or damage vegetative cover the newly exposed soil, compaction from heavy equipment, and removal of vegetation along the transmission line ROW and access roads would increase the potential for erosion.

As with the North Alternative, the South Alternative would remove some soil from potential use and subject the ground beneath new or improved access roads to long-term compaction. The impacts from footings and roadways built on expansive soil or steep slopes would be the same as the North Alternative, and would require more work to limit erosion and ensure stability. Proper road design would mitigate long-term erosion impacts (see Section 3.5.4, Mitigation).

Strategies to reduce soil disturbance and erosion along the South Alternative would be the same as those under the North Alternative, including limiting site disturbance, preserving vegetative cover, and implementing temporary erosion control measures (see Section 3.5.4, Mitigation). As with the North Alternative, temporary soil impacts from the South Alternative would be ***low*** with the implementation of these erosion control mitigation measures.

Soil compaction under the South Alternative would be expected in similar locations as under the North Alternative. The implementation of the same mitigation measures would reduce compaction, and yield low long-term impacts on soils (see Section 3.5.4, Mitigation).

Permanent loss of prime farmland soils under structure footings and permanent access roads would occur with construction of the South Alternative. Additionally, temporary compaction impacts from heavy machinery would occur on prime farmland soils. The amount of prime farmland soils permanently impacted by the South Alternative would be approximately 6.7 acres, but would vary depending on the route option. Therefore, the long-term impact on prime farmland soils would be ***low***. Implementation of mitigation as described in Section 3.5.4, Mitigation, would reduce temporary impacts on prime farmland soils from compaction.

As with the North Alternative, typical operations and maintenance under the South Alternative would have a ***low*** impact on soils. Impacts on soil from annual vehicle ground inspections and vegetation maintenance would be the same, as would the impacts and mitigation for temporary road construction.

South Alternative Route Options

Options 1 through 4

Impacts on geology and soils from Options 1 through 4 would be similar to impacts described for the South Alternative (***low***). These options would have similar soil productivity, hydric soils, and geologic impacts as those described above. However, the transmission line ROW for Option 3 would traverse approximately 126 acres of prime farmland, in contrast to the South Alternative and Options 1 and 2, which would each traverse approximately 33 acres of prime farmland, and Option 4, which would traverse approximately 77 acres of prime farmland. Impacts on prime farmland under Option 3 would be ***moderate***.

3.5.4 Mitigation

The following mitigation measures have been identified to reduce or eliminate impacts on soils from the Project.

- Restore compacted cropland soils as close as possible to pre-construction conditions using tillage. Break up compacted soils where necessary by ripping, tilling, or scarifying before seeding.
- Remove topsoil from cropland soils in a manner that will allow it to be reused after construction.
- Follow all applicable soil and water conservation measures listed in the relevant Forest Service Handbook on C-TNF managed land.
- Minimize construction on steep or unstable slopes, if possible.
- Locate structures or access roads outside of previously active slides, bedrock hollows, or other geologic hazard areas, where possible.
- Develop and implement a SWPPP to control erosion and sedimentation.
- Monitor erosion control BMPs during construction to ensure proper function.
- Install sediment barriers and other suitable erosion and runoff control devices prior to ground-disturbing activities at construction sites to minimize off-site sediment movement where the potential exists for construction activities to impact surface water or wetlands.
- Limit grubbing to the area around structure sites to reduce the impact on the roots of low-lying vegetation so that they can resprout.
- Design temporary and permanent access roads to control runoff and prevent erosion by using low grades, outsloping, intercepting dips, water bars, or ditch-outs, or a combination of these methods.
- Surface all permanent access roads with rock to help prevent erosion and rutting of road surfaces and support vehicle traffic.
- Limit the amount of time soils are left exposed. Use BMPs on exposed piles of soil to reduce erosion potential from rain or wind.
- Prepare a Fugitive Dust Control Plan to control windblown dust, include measures to develop and implement a dust control plan.
- Use BMPs to limit erosion and the spread of noxious weeds (see Section 3.4.4, Vegetation).
- Use appropriate seed mixes; application rates, methods, and timing to revegetate disturbed areas (see Section 3.4.4, Vegetation).
- Monitor reseeded areas for adequate growth and implement contingency measures as necessary (see Section 3.4.4, Vegetation).
- Save topsoil removed for structure and temporary spur road construction and use on-site for restoration activities, where possible (see Section 3.4.4, Vegetation).

- Retain existing low-growing vegetation where possible (see Section 3.4.4, Vegetation).
- Leave erosion and sediment control devices in place until all disturbed sites are revegetated and erosion potential has returned to pre-project conditions (see Section 3.4.4, Vegetation).
- Encourage workers to cut or crush vegetation in-place, rather than blade, in temporary disturbance areas (see Section 3.4.4, Vegetation).
- Decommission temporary roads according to the requirements and BMPs of the appropriate land management agency (see Section 3.4.4, Vegetation).
- Locate staging areas in previously disturbed or graveled areas where practicable (see Section 3.4.4, Vegetation).
- Maintain erosion controls near waterbodies (see Section 3.6.4, Water Resources, Floodplains, and Wetlands).
- Minimize ground-disturbing activities, particularly in sensitive habitats (see Section 3.7.4, Wildlife).
- Limit road improvements to the minimum amount necessary (see Section 3.11.4, Transportation).
- Avoid excavation in areas of identified contaminants (see Section 3.13.4, Public Health and Safety).
- Prepare and implement Spill Prevention and Response Procedures (see Section 3.13.4, Public Health and Safety).
- Ensure construction vehicles travel at low speeds on access roads and at construction sites to minimize dust (see Section 3.14.4, Air Quality).
- Use local rock sources for road construction where practicable (see Section 3.14.4, Air Quality).

3.5.5 Unavoidable Impacts Remaining after Mitigation

Unavoidable short-term impacts on soils would result from soil compaction, erosion, and vegetation degradation from construction. Long-term impacts would result from soil compaction and reduced soil productivity especially on prime farmlands under new structures, roadbeds, and at the Hooper Springs Substation and Lanes Creek Substation (for the North Alternative).

3.5.6 No Action Alternative

Under the No Action Alternative, the Project would not be built, so impacts on geology and soils related to the construction, operation, and maintenance of the transmission lines would not occur.

3.6 Water Resources, Floodplains, and Wetlands

3.6.1 Affected Environment

Surface Water

Watersheds in the project area include the Bear Lake (16010201), Blackfoot (HUC 17040207), Willow (HUC 17040205), and Salt (HUC 17040105) watersheds. The Bear Lake watershed includes Bear Lake, a large natural lake on the Utah/Idaho border as well as the Bear River. Much of the land within the watershed is used for grazing and multi-purpose public lands. The Blackfoot watershed includes the Blackfoot River and tributaries, as well as the Blackfoot Reservoir. Much of the land within the Blackfoot watershed is used for agriculture and mining purposes, but some areas have relatively intact sagebrush-dominated vegetation communities.

The Willow watershed includes Gray's Lake and the tributaries that flow into it, including Willow Creek and Gravel Creek. Additionally, the Willow watershed contains forested mountains of the C-TNF, as well as wetlands and drainages. The Salt watershed includes Chippy Creek, Tincup Creek, and tributaries to these waterbodies. Lands within the Salt watershed are used primarily for agriculture and mining purposes.

The North Alternative corridor crosses four perennial waterbodies, including the Blackfoot River, Little Blackfoot River, Meadow Creek, and Gravel Creek (see Map 3-7). Several smaller tributaries and intermittent waterbodies (i.e., Chippy Creek and Tin Cup Creek), are also located within the North Alternative corridor. The South Alternative crosses the Blackfoot River, Mill Canyon Creek, and several smaller unnamed tributaries to the Blackfoot River (see Map 3-7).

The Blackfoot River is approximately 32 miles long and listed on the Nationwide Rivers Inventory (NRI) for scenery and fish resources (National Park Service 2011). The water body is a low gradient, highly sinuous river with headwaters in the wetlands and drainages of Chippy Creek and Upper Lanes Creek before draining into the Blackfoot Reservoir. The Blackfoot River's other major tributaries include Diamond Creek, Dry Valley Creek, and Slug Creek. The North Alternative corridor crosses the Blackfoot River in one location (between line mile 9 and 10) near the Blackfoot Reservoir (see Map 3-7). At this crossing, the river is approximately 100 feet wide and topographically constrained with little riparian buffer. The corridor for the South Alternative crosses the Blackfoot River in two locations (line miles 10 and 18) (see Map 3-7). Both river crossings are less sinuous than other parts of the river because they are constrained by steeper topography. Where the Blackfoot River travels through the broad flat valley south of the South Alternative and Blackfoot River Road, the river is highly sinuous with a fairly dense riparian buffer.

The headwaters of the Little Blackfoot River are in the mountains of the C-TNF south of the North Alternative corridor in line mile 23. The river flows into a small reservoir and then down through Enoch Valley and Long Valley before entering the Blackfoot Reservoir at the town of Henry, Idaho. The portion of the river crossed by the North Alternative (between line mile 16 and 17) has a narrow emergent wetland floodplain that is approximately 300 feet wide.

Meadow Creek is a low-gradient stream with headwaters east of the Blackfoot Mountains, in Bingham County, Idaho. The creek flows through Crane Flat and Chubb Flat before emptying into Goose Lake, a seasonal marsh north of the Blackfoot Reservoir. The portion of Meadow Creek crossed by the North Alternative corridor (between line mile 18 and 19) is at the southernmost end of Goose Lake. In this location, the creek has been artificially bermed and channelized and there are several emergent wetlands and backwater channels along the banks of the creek.

The headwaters of Gravel Creek are on the north aspect slopes of the Gray's Range in the C-TNF. The portion of the creek crossed by the North Alternative corridor (between line mile 26 and 27) is low-gradient, shallow, and sinuous with a 400- to 500-foot-wide floodplain of scrub-shrub wetland.

Intermittent drainages are also crossed by the North and South alternative corridors. Intermittent waterbodies are typically shallow topographic features that convey seasonal snowmelt and precipitation for a short period in the spring, but are dry for much of the year. Several intermittent drainages crossed by the alternatives are not mapped by USGS, but were identified on C-TNF, BLM, and BIA lands during initial wetland and water body identification efforts. Field wetland and water body identification is ongoing; therefore, additional intermittent waterbodies may be present in additional locations.

Surface Water Quality

The state of Idaho's water quality standards (IDAPA 58.01.02.100) designates beneficial uses for surface waterbodies. Beneficial uses are broadly defined as "[a]ny of the various uses which may be made of the water of Idaho, including, but not limited to, domestic water supplies, industrial water supplies, agricultural water supplies, navigation, recreation in and on the water, wildlife habitat, and aesthetics" (IDAPA 58.01.02.010.08). The state monitors water quality as it relates to the beneficial use designations and lists those waters not meeting the appropriate standards. Table 3-14 lists the beneficial use designations for the perennial surface waterbodies crossed by the North and South alternatives.

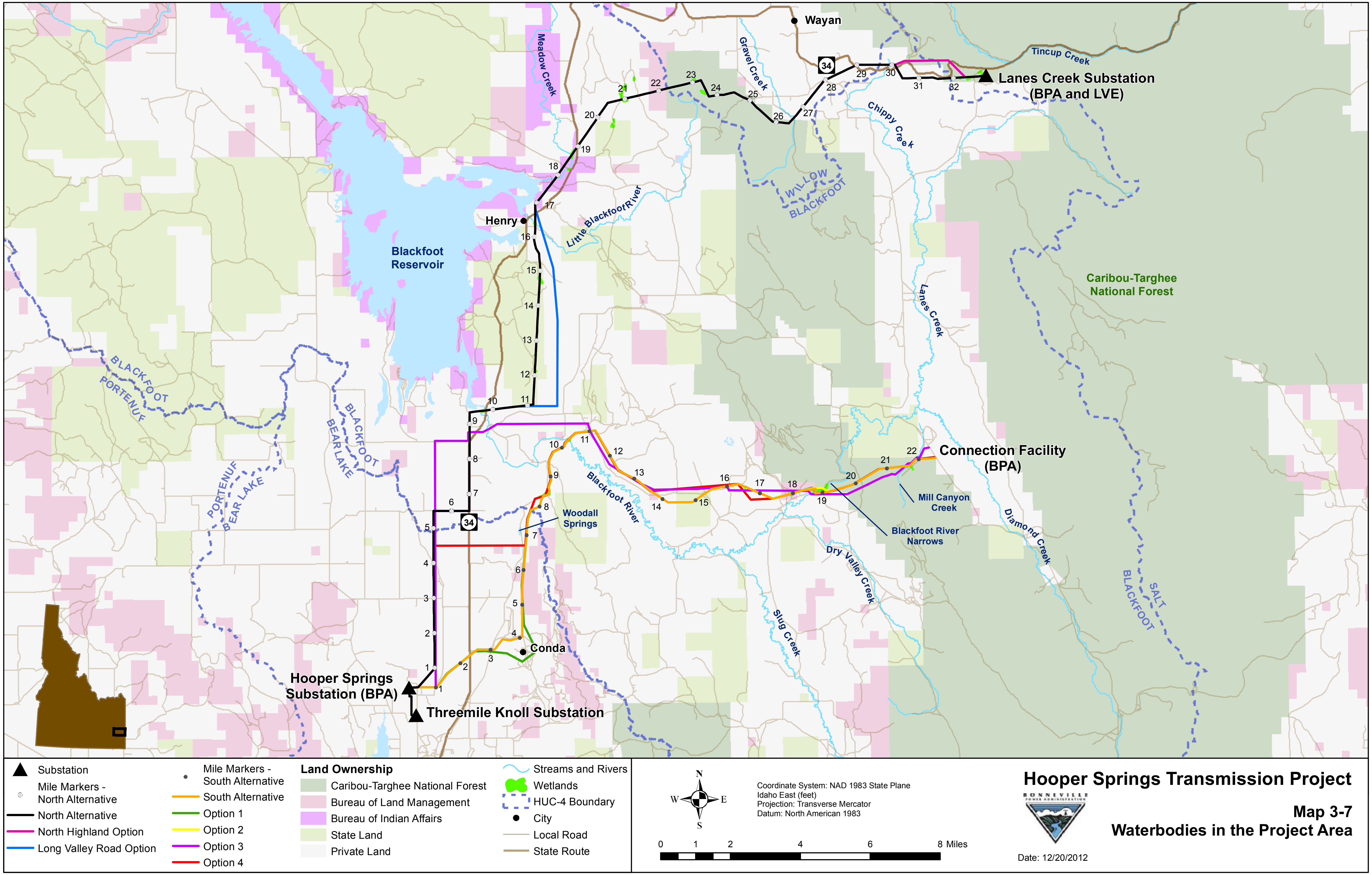

Wayan
Tincup Creek
Lanes Creek Substation
(BPA and LVE)
Meadow Creek
Gravel Creek
Chippy Creek
WILLOW
BLACKFOOT
Little Blackfoot River
Henry
Blackfoot
Reservoir
Lanes Creek
Caribou-Targhee
National Forest
BLACKFOOT
PORTNEUF
BLACKFOOT
BEAR LAKE
PORTNEUF
BEAR LAKE
Connection Facility
(BPA)
Mill Canyon
Creek
Blackfoot River
Narrows
Blackfoot River
Woodall
Springs
Diamond Creek
Dry Valley Creek
Slug Creek
BLACKFOOT
SALT
Conda
Hooper Springs
Substation (BPA)
Threemile Knoll Substation
34
Substation
Mile Markers -
North Alternative
North Alternative
North Highland Option
Long Valley Road Option
Mile Markers -
South Alternative
South Alternative
Option 1
Option 2
Option 3
Option 4
Land Ownership
Caribou-Targhee National Forest
Bureau of Land Management
Bureau of Indian Affairs
State Land
Private Land
Streams and Rivers
Wetlands
HUC-4 Boundary
City
Local Road
State Route
N
W
E
S
Coordinate System: NAD 1983 State Plane
Idaho East (feet)
Projection: Transverse Mercator
Datum: North American 1983
0 1 2 4 6 8 Miles
Hooper Springs Transmission Project
BONNEVILLE
Map 3-7
Waterbodies in the Project Area
Date: 12/20/2012

Table 3-14. Perennial Waterbodies with Beneficial Use Designations in the Project Area

Waterbody	Beneficial Use Designations		
	Aquatic Life	Recreation	Other
Blackfoot River (confluence of Lanes and Diamond Creeks to Blackfoot Reservoir)	Cold; SS	PCR	DWS; SRW
Little Blackfoot River	Cold; SS	PCR; PCR	ND
Meadow Creek (source to Blackfoot Reservoir)	Cold	SCR	ND
Gravel Creek	Cold; SS	SCR	ND
Mill Canyon Creek	Cold; SS	SCR	ND

Source: IDEQ 2010a

Cold – Cold Water Communities; SS – Salmonid Spawning; PCR – Primary Contact Recreation; SCR – Secondary Contact Recreation; DWS – Domestic Water Supply; SRW – Special Resource Water; ND – non-designated waters for those uses.

The Blackfoot River, Little Blackfoot River, Meadow Creek, and Mill Canyon Creek are listed on the 2010 303(d) list (IDEQ 2010a). Section 303(d) of the Clean Water Act establishes requirements for states and Tribes to identify and prioritize waterbodies that do not meet water quality standards. The Blackfoot River is listed for impaired cold water aquatic life attributable to dissolved oxygen, sedimentation, selenium, and temperature. In 2006, a Blackfoot River Total Maximum Daily Load (TMDL) Implementation Plan was developed as part of the Blackfoot Subbasin Assessment to address sedimentation and nutrients. The Little Blackfoot River is impaired for cold water aquatic life and salmonid spawning, with the primary causes being low flow alterations, substrate habitat alterations, and sedimentation/siltation. Meadow Creek is impaired for cold water aquatic life, with sedimentation/siltation as the primary causes of impairment. Neither the Little Blackfoot River nor Meadow Creek have TMDL plans (IDEQ 2012). Mill Canyon Creek is listed for impaired cold water aquatic life and salmonid spawning attributable to physical substrate habitat alterations, sedimentation/siltation, and selenium. Gravel Creek is not on the 303(d) list, though grazing and limited riparian shade are present along the waterbody near the North Alternative corridor.

Groundwater Resources

The North and South alternative corridors cross the Soda Springs and Blackfoot Reservoir groundwater systems, which are both composed primarily of valley fill materials (Graham and Campbell 1981). Major sources of recharge for the Soda Springs groundwater system include downward percolation of precipitation and snowmelt, seepage from surface streams along the margins of the basin, seepage from the Blackfoot Reservoir, and possible underflow from the Bear River-Dingle Swamp groundwater system. Major sources of recharge for the Blackfoot Reservoir groundwater system include downward percolation of precipitation and snowmelt, runoff from the adjacent uplands, and seepage from the Blackfoot Reservoir and overlying streams (Graham and Campbell 1981). Groundwater flow in the project area is generally from the northeast to the southwest (Graham and Campbell 1981); however, in mountainous areas of the C-TNF, groundwater flow can be from the northwest to the southeast.

Most of the project area falls within the source area of the Eastern Snake River Plain Aquifer, which is designated by the U.S. Environmental Protection Agency (EPA) as a sole-source aquifer under Section 1424(e) of the Safe Drinking Water Act of 1974 (Public Law 93-523, 42 U.S.C. 300 et seq.). EPA defines a sole source aquifer as one that supplies at least 50 percent of the drinking water consumed in the area overlying the aquifer. EPA guidelines also stipulate that these areas can have no alternative drinking water source(s) which could physically, legally, and economically supply all those who depend upon the aquifer for drinking water.

Groundwater well data indicates that one domestic well is located about 375 feet from the North Alternative corridor in line mile 5 (Idaho Department of Water Resources 2012). No wells were identified within 50 feet of any proposed access roads for the North Alternative. Two groundwater monitoring wells are located within the South Alternative corridor. One is within both the transmission line and access road ROW, while the other is just within the transmission line ROW.

Floodplains

The Federal Emergency Management Agency has not produced floodplain maps for the project area. Floodplains were identified for this assessment based on topographic conditions, aerial photographic interpretation, and field verification of hydrologic indicators. Surface waterbodies with active floodplains in the North Alternative corridor include the Blackfoot River, Little Blackfoot River, Meadow Creek, and Gravel Creek. The only active floodplain crossed by the South Alternative corridor is along the Blackfoot River.

Floodplains crossed by the North and South alternative corridors are largely natural (though narrow in some areas). Where the North Alternative corridor crosses the Blackfoot River, the floodplain is naturally constrained and has little functional floodplain habitat. The Little Blackfoot River is tightly constrained by topography for much of its length, but empties onto a large floodplain/wetland complex where it crosses Enoch Valley. The portion of the Little Blackfoot River crossed by the North Alternative corridor has a narrow emergent wetland floodplain that is approximately 300 feet wide. Gravel Creek has a 400- to 500-foot-wide floodplain with emergent and scrub-shrub wetlands in the North Alternative corridor, but further downstream, the creek is heavily channelized and largely isolated from the historic floodplain. Meadow Creek has been channelized and isolated from portions of its natural floodplain at the North Alternative corridor crossing. Along the South Alternative corridor, a wide floodplain with emergent and scrub-shrub wetlands is present in the valley south of the South Alternative and Blackfoot River Road. To the east and west of this valley, the floodplain is very narrow to nonexistent where the river is constrained by the Blackfoot River Narrows, Blackfoot River Road, and hilly topography.

Wetlands

Wetlands are areas of transition between aquatic and terrestrial systems, where water is the dominant factor determining the development of soil characteristics and associated biological communities. Intact wetland systems provide a myriad of benefits to aquatic systems and the ecosystem as a whole including sediment capture, large woody debris recruitment, temperature buffering, nutrient input, habitat, cover, and many more. Wetlands can also filter heavy metals and pollutants out of the water and capture them in soils. They are important communities that have declined over the years due to an increase in agriculture practices and development in the project area. Wetland habitats within the project area consist of a combination of natural and human-made features on the landscape. Natural wetland features include emergent wetland depressions, floodplain wetlands, and backwater sloughs. Human-made features include excavated or artificially impounded livestock and/or wildlife ponds.

Wetland types within the project area include palustrine aquatic bed (PAB), palustrine emergent (PEM), palustrine scrub-shrub (PSS), and palustrine unconsolidated bottom (PUB). PAB wetlands are present in topographically low areas where standing water remain throughout most of the year and vegetation growth is limited. Vegetation in PAB wetlands is limited, but includes hardstem bulrush (*Scirpus acutus*), sharp-fruited rush (*Juncus acuminatus*), and reed canary grass (*Phalaris arundinacea*). PEM wetland are the most common wetland type within the project area along the margins of excavated and/or impounded livestock and/or wildlife ponds; in floodplain wetlands adjacent to the streams and rivers; and in naturally occurring topographical depressions. Vegetation in PEM wetlands is primarily reed canarygrass but also includes tufted hairgrass (*Deschampsia caespitosa*) and a mix of native sedges (*Carex praegracilis*, *Carex utriculata*) and rushes (swordleaf rush (*Juncus ensifolius*) and sharp-fruited rush). Several species of sagebrush and upland grasses grow up to the edges of the PEM wetlands, making their boundaries fairly distinct. PSS wetlands also occur within the riparian floodplains of streams and rivers crossed by the alternative corridors and are dominated by willows, particularly Booth willow (*Salix boothii*), Wolf's willow (*Salix wolfii*), Geyer's Willow (*Salix geyeriana*), and coyote willow (*Salix exigua*). A few, small PUB wetlands were identified where the North Alternative corridor crosses the Blackfoot River and the Little Blackfoot River. These wetlands occur below the waterbodies' ordinary high water mark and are characterized by a lack of vegetation within the channel and an unconsolidated, silty substrate.

Approximately 12.6 acres of wetlands in the North Alternative corridor were identified (see Table 3-15). Wetland types within the North Alternative corridor include PAB, PEM, PSS, and PUB. Wetlands within the North Alternative corridor are categorized as Category III wetlands which are relatively common in the state but provide fewer high quality functions, compared to Category I and II wetlands. The North Alternative corridor crosses approximately 0.1 mile of the Gravel Creek Special Emphasis Area, which is a wetland mitigation parcel for Idaho Transportation Department (ITD) managed under a Memorandum of Understanding by USFS. Review of wetland data indicate that the small portion of the special emphasis area crossed by the North Alternative corridor may not contain wetlands.

About 2.5 acres of wetlands were identified within the South Alternative corridor (see Table 3-15). Wetland types include PEM and PSS. These wetlands are associated with the Blackfoot River, smaller drainages, and depressional wetlands (CH2M HILL 2008). Most of these wetland areas were characterized as high-quality Category II wetlands (Berglund 1999).

Table 3-15. Wetlands Identified within the North and South Alternative Corridors

Cowardin Class[1]	Acres[2]						
	North Alternative[3]	North Highland Option	South Alternative	SA – Option 1	SA – Option 2	SA – Option 3	SA – Option 4
PAB	1.9	0.0	0.0	0.0	0.0	0.0	0.0
PEM	9.9	1.82	0.55	0.44	0.5	0.0	0.41
PFO	0.0	0.17	0.0	0.0	0.0	0.0	0.0
PSS	0.5	0.4	1.83	1.25	1.73	0.0	1.32
PUB	0.3	0.02	0.0	0.0	0.0	0.0	0.0
PEM/PSS	0.0	0.0	0.13	0.08	0.1	0.24	0.08
Total	**12.60**	**2.41**	**2.51**	**1.77**	**2.33**	**0.24**	**1.81**

[1] Cowardin et al. 1979.

[2] Acres for the Northern Highland Option are based on National Wetland Inventory data. The acres for South Alternative Route Options 1 through 4 do not include access roads because they are not currently known.

[3] The Long Valley Road Option does not cross wetlands.

Aquatic Influence Zones

Portions of the North and South alternative corridors are within the C-TNF. Lakes, reservoirs, ponds, perennial and intermittent streams, and wetlands crossed by the corridors on C-TNF lands are prescribed as AIZs. These zones control the biotic and abiotic processes that affect water quality and habitat characteristics important for aquatic plant and animal species. Many vegetation types and habitats within AIZs are rare and sensitive to disturbance. Site-specific boundary widths for various habitat types identified as AIZs are identified in the CNF RFP (USFS 2003a) and vary relative to management goals and objectives. AIZ management direction overrides direction from other overlapping management areas.

Alternative Route Options

North Alternative Route Options

Under the Long Valley Road Option, the crossing of the Little Blackfoot River is approximately 830 feet upstream of the previously described North Alternative crossing. The only floodplain identified under this option is the floodplain associated with the Little Blackfoot River, which is of similar width as described above. A review of the National Wetland Inventory database (USFWS 2012b) did not identify any wetlands along the Long Valley Road Option.

The North Highland Option would cross one intermittent drainage that flows to a perennial stream and a wetland area south of Highway 34. The intermittent drainage flows between a road and hillslope so the floodplain is narrow. No wetlands are present along this option.

South Alternative Route Options

Streams, floodplains, and wetlands along the corridors for Options 1 and 2 are the same as described above for the South Alternative. Option 3 crosses the Blackfoot River further west toward the Blackfoot Reservoir at the start of Blackfoot River Road than Options 1, 2, and 3. PEM wetlands and a vegetated floodplain are present where the corridor crosses the river. Option 4 crosses an area of disturbed wetlands north of Conda within the mining area.

3.6.2 Environmental Consequences of the North Alternative

Construction Impacts

Construction of the North Alternative would result in riparian and wetland vegetation clearing, soil disturbance, and changes in contours associated with construction of access roads, structure installation, and vegetation clearing and maintenance. The indirect impacts on water resources from these activities could include the potential for increased sedimentation in surface waters and wetlands; spills entering groundwater, surface water, and wetlands; and changes in stream and wetland habitat suitability and water quality associated with vegetation removal and/or soil compaction.

No impacts on water resources, floodplains or wetlands would occur from substation construction at the Hooper Springs or Lanes Creek substation sites under the North Alternative. None of these resources are present at the proposed substation sites.

Surface Water, Groundwater, and Water Quality

Although the North Alternative may have some structures within 50 feet of smaller, intermittent streams crossed by the corridor, structures would not be placed in or within 100 feet of the Blackfoot River, Little Blackfoot River, Meadow Creek, or Gravel Creek. Proposed structures near the NRI-designated segment of the Blackfoot River would be located greater than 250 feet from the river bank. Based on this structure placement, there would be no alteration to the free-flowing nature of the Blackfoot River or appreciable changes to its remarkable values. Therefore, the North Alternative would not foreclose options to classify any portion of the NRI segment as a wild, scenic, or recreation river area.

No new access roads would be placed over any perennial waterbodies and no access roads crossing the Blackfoot River, Little Blackfoot River, or Gravel Creek would be improved. An existing bridge that crosses Meadow Creek would be replaced, which may result in temporary increased sediment from stream bank disturbance during bridge removal and replacement. Supports for the replaced bridge would not be placed in the creek channel; therefore, bridge replacement impacts would be limited to the duration of construction. New and improved access road crossings, including culvert installations, at intermittent waterbodies would result in local changes to the physical characteristics of waterbodies and work activities may temporarily contribute sediment into the waterbodies. Waterbody impacts associated with access road construction and improvement for the North Alternative would be ***low*** to ***moderate*** with implementation of mitigation measures described in Section 3.6.4.

Vegetation clearing in the ROW and soil disturbance in structure and access road work areas could result in increased erosion and corresponding sediment transport into down gradient waterbodies. Lands most at risk for down slope sedimentation from soil or vegetation disturbance are slopes that exceed 40 percent (primarily on C-TNF lands). The North Alternative corridor would cross few areas with slopes exceeding this threshold that would be located up gradient of water resources (see Section 3.5, Geology and Soils). Further, the erosion control mitigation measures described in Section 3.6.4 would limit sedimentation travelling outside of the North Alternative corridor. Overall, there would be a ***low*** impact on surface water quality from sediment entering waterbodies from construction activities.

The North Alternative corridor would cross through portions of the Blackfoot watershed, the Willow watershed, and the Salt watershed (waterbodies in the Salt watershed would not be crossed). Impacts associated with stream crossings, vegetation clearing, and soil disturbance in the Blackfoot and Willow watersheds would be short term in nature and would deliver minor quantities of sediment relative to the overall sediment contribution to the watersheds. Overall, impacts would be ***low*** at the watershed level.

The North Alternative could potentially result in accidental fuel spills or equipment leaks, that if left uncontained during a storm event could leach through the soil into the groundwater. As described in Section 3.6.4, spill response procedures would be implemented to manage hazardous material spills. Should a spill occur strategies would be in place to ensure such releases are contained and cleaned up promptly in accordance with applicable regulations. Impacts on groundwater, including the sole-source aquifer and wells would be ***low*** as only one well is located near the North Alternative corridor and mitigation measures would be implemented to limit accidental spills or equipment leaks that may contaminate groundwater.

Floodplains

No structures would be placed and no new permanent or temporary access roads would be constructed in active floodplains under the North Alternative. A short section of an access road would be improved along the southern boundary of the Little Blackfoot River floodplain. Because the access road already exists, road improvement would not require the removal of any vegetation, nor would it result in additional soil compaction, reduced infiltration of groundwater, or decreased flood storage capacity. Overall, ***no*** to ***low*** impacts on floodplains associated with the North Alternative would occur. There would be little detectable localized change to natural floodplain functions and there would be no appreciable increased risk of flood loss.

Wetlands

Construction of the North Alternative would result in approximately 0.05 acre of short-term impacts and approximately 1.21 acres of fill resulting in long-term, direct impacts on wetlands (see Table 3-16). Short-term impacts would include temporary wetland vegetation clearing and ground disturbance from construction equipment activities at structure sites and counterpoise installation. Long-term impacts on wetlands would include permanent access road construction, resulting in the permanent removal of wetland vegetation and the permanent alteration of wetland contours. No wetlands would be permanently lost for structure footings and no PSS wetlands would be converted to PEM wetlands within the North Alternative corridor.

Approximately 0.05 acre of short-term wetland impacts would result from temporary vegetation clearing at structure installation work areas. These temporarily cleared areas would be restored in accordance with permit conditions. These short-term impacts would not functionally reduce the size, integrity, or connectivity of impacted wetlands within the project corridor. Overall, short-term impacts on wetlands would be ***low*** to ***moderate***.

Table 3-16. Wetland Impacts within the North Alternative Corridor

Cowardin Class[1]	Short-term Impacts[2] (acres)	Long Term Impacts[3] (acres)
PAB	0.0	0.01
PEM	0.05	1.11
PSS	0.0	0.02
Totals	**0.05**	**1.14**[4]

[1] Cowardin et al. 1979.

[2] Short-term impacts would be restored after construction in accordance with permit conditions.

[3] Long-term impacts would result in permanent wetland loss/fill from access roads.

[4] This total includes the acreage for 12 sites ranging in size from 0.003 to 0.45 acre.

Long-term, direct wetland impacts associated with the North Alternative would occur from the construction of permanent access roads. Permanent access roads would require vegetation removal and placement of fill material so that these wetlands would no longer provide wetland functions. Relative to the quantity of wetlands identified in the North Alternative corridor and the general project area, 1.14 acres of permanent wetland fill would be small. Overall, through the implementation of mitigation measures described in Section 3.6.4 and the small quantity of wetlands permanently impacted by the North Alternative, wetland impacts from permanent access road construction would be ***low.***

Indirect impacts from vegetation clearing and soil disturbance outside of wetlands could result in decreased infiltration due to soil compaction that could decrease hydrologic input, increased erosion, introduced weeds, and increased sediment transport. All of these results could negatively affect the water quality and vegetation in the North Alternative corridor wetlands. Overall, because most of the vegetation clearing and soil disturbance activities would be conducted at a sufficient distance from wetlands, the indirect impacts would be ***low.***

No structures or access roads would be placed in the Gravel Creek Special Emphasis Area under the North Alternative. As the Gravel Creek Special Emphasis Area does contain tall-growing vegetation in the North Alternative corridor crossing, vegetation trimming or clearing may occur within the portion of the corridor that crosses this parcel resulting in indirect impacts on nearby wetlands in the area that would be similar to those described above. While wetland impacts on the Special Emphasis Area would be small and temporary, these parcels have been protected as enhancement areas; therefore, the impact would ***moderate.***

Aquatic Influence Zones

Tree and vegetation removal within AIZs under the North Alternative would have the potential to increase erosion and sediment delivery to downstream waters, decrease woody debris recruitment, locally increase temperatures within the waterbodies, decrease groundwater infiltration, and increase vectors for invasive species and noxious weeds. AIZ vegetation removal also would decrease infiltration of precipitation and decrease bank stability, which could increase runoff and sediment loads to surface waters. Soil compaction associated with operating heavy machinery within AIZs would compact soils, which would contribute to increased runoff and sediment delivery.

Vegetation removal and soil disturbance in AIZs would have the potential to impact surface waters and could occur during structure installation, access road construction, culvert installation, and ROW vegetation clearing. Under the North Alternative, no proposed structures would be placed in perennial waterbody AIZs, though one access road improvement (including bridge replacement) would occur in the perennial Meadow Creek AIZ. Approximately 5.0 acres of vegetation clearing and soil disturbance from road construction, structure installation, and ROW clearing would occur in AIZs associated with wetlands and/or intermittent drainages under the North Alternative. Approximately 2.5 acres of this area would occur within forested AIZ habitat on C-TNF. Removal of tall-growing vegetation within forested habitat would be a long-term impact because it would not be allowed to regrow. Approximately 2.5 acres of non-forested AIZ areas would be impacted by road or tower construction. Of the 2.5 acres, the majority (2.47 acres) would be long-term impact from road construction. Relative to the overall AIZ size over the entire waterbody length or wetland area, the localized changes to AIZ vegetation or soils associated with the North Alternative would not alter the physical or chemical qualities of the AIZ; impacts would be ***low***.

Operation and Maintenance Impacts

Operation and maintenance of the North Alternative corridor would have ***low*** to ***no*** impact on water resources, floodplains, and wetlands. Maintenance vehicles would stay on established access roads and little vegetation maintenance would be needed in wetland areas along the alternative corridor. All vegetation management would be conducted in accordance with BPA's vegetation management practices which would limit potential impacts on nearby waterbodies. Low-growing vegetation would be maintained within the ROW, which would result in the long-term control of vegetation in a small portion of previously-forested AIZs.

North Alternative Route Options

Impacts from the Long Valley Road Option would be similar to the indirect surface and groundwater impacts described above for the North Alternative. The option would change the location of the proposed crossing of the Little Blackfoot River, but would not result in additional impacts from those previously described. Further, no National Wetland Inventory wetlands would be impacted under this routing option. The Long Valley Road Option would result in a ***low*** impact on water resources.

The North Highland Option would reduce impacts on wetlands and perennial streams because the option would move the corridor to non-wetland areas. The one intermittent drainage would be spanned by the corridor; impacts on water resources from the North Highland Option would be ***low***. Indirect impacts on surface and groundwater and wetlands from clearing and soil disturbance would be similar to those described above for the North Alternative (***low***).

3.6.3 Environmental Consequences of the South Alternative

Construction Impacts

While construction of the South Alternative would require less riparian and wetland vegetation clearing than the North Alternative, direct impacts on water resources from soil disturbance, changes in contours associated with construction of access roads, structure installation, and vegetation clearing and maintenance would be similar to those described for the North Alternative. Indirect impacts also would be similar.

As with the North Alternative, ***no*** impacts on water resources, floodplains or wetlands would occur from substation construction at the Hooper Springs sites under the South Alternative. None of these resources are present at the proposed substation site.

<u>Surface Water, Groundwater, and Water Quality</u>

Similar to the North Alternative, the South Alternative may have some structures within 50 feet of smaller, intermittent streams; however, structures would not be placed in or within 100 feet of the Blackfoot River. Proposed structures near the NRI-designated segment of the Blackfoot River would be located greater than 245 feet from the river bank so there would be no alteration to the free-flowing nature of the Blackfoot River. As with the North Alternative, placement of the South Alternative would not foreclose options to classify any portion of the NRI segment as a wild, scenic, or recreation river area.

New access roads would be constructed over three perennial streams, but none over the Blackfoot River. New and improved access road crossings for the South Alternative, including culvert installations, at intermittent waterbodies would result in the same impacts as those described for the North Alternative; ***low*** to ***moderate*** with implementation of mitigation measures described in Section 3.6.4.

As with the North Alternative, the South Alternative would require ROW vegetation clearing and soil disturbance in structure and access road work areas resulting in increased erosion and corresponding sediment transport into downgradient waterbodies. The South Alternative corridor would cross few areas with slopes exceeding 40 percent located upgradient of water resources at the east end of the corridor. Implementation of erosion control measures described in Section 3.6.4 would limit sedimentation travelling outside of the South Alternative corridor; therefore limiting potential for contributions to sedimentation in the Blackfoot River or Mill Canyon Creek, which are impaired. Overall, there would be a ***low*** impact on surface water quality from sediment entering waterbodies from construction activities.

The South Alternative corridor would cross through portions of the Bear Lake and Blackfoot watersheds. Impacts associated with stream crossings, vegetation clearing, and soil disturbance in these watersheds would be short term in nature and would deliver minor quantities of sediment relative to the overall sediment contribution to the watersheds. Overall, impacts would be ***low*** at the watershed level.

Similar to the North Alternative, the South Alternative could potentially result in accidental fuel spills or equipment leaks. As described in Section 3.6.4, spill response procedures would be implemented to manage hazardous material spills. Impacts on groundwater, including the sole-source aquifer and wells would be ***low*** as only 2 wells are located within the South Alternative corridor and mitigation measures would be implemented to limit accidental spills or equipment leaks that may contaminate groundwater.

Floodplains

As with the North Alternative, structures would not be placed and no new permanent or temporary access roads would be constructed in active floodplains under the South Alternative resulting in ***no*** to ***low*** impacts.

Wetlands

Construction of the South Alternative would result in approximately 0.08 acre of short-term impacts and approximately 0.03 acre of fill resulting in long-term, direct impacts on wetlands (see Table 3-17). Short-term impacts on wetlands under the South Alternative would occur from temporary wetland vegetation clearing, construction equipment ground disturbance, and counterpoise installation. Long-term impacts on wetlands from access road construction could result in the permanent removal of wetland vegetation and the permanent alteration of wetland contours. No wetlands would be permanently lost for structure footings and no PSS wetlands would be converted to PEM wetlands within the South Alternative corridor.

Similar to the North Alternative, most short-term, direct wetland impacts associated with the South Alternative would be from construction of temporary access roads which requires vegetation removal and the temporary filling of wetlands to prepare a roadbed. All temporary fill placed in wetlands would be removed and the affected areas returned to pre-construction elevations (see Section 3.6.4, Mitigation). The remaining short-term wetland impacts would result from temporary vegetation clearing at structure installation work areas. Short-term impacts from construction of the South Alternative would be similar to those under the North Alternative; ***low*** to ***moderate***.

Table 3-17. Wetland Impacts within the South Alternative Corridor

Cowardin Class[1]	Short-term Impacts[2] (acres)	Long Term Impacts[3] (acres)
PEM/PSS	0.0	0.03
PSS	0.14	0.0
Totals	**0.14**	**0.03**

[1] Cowardin et al. 1979.
[2] Short-term impacts would be restored after construction in accordance with permit conditions.
[3] Long-term impacts would result in permanent wetland loss/fill from access roads.

As with the North Alternative, long-term, direct wetland impacts under the South Alternative would occur from vegetation removal and placement of fill material for the construction of permanent access roads. Relative to the quantity of wetlands identified in the South Alternative corridor and the general project area, 0.03 acre of permanent wetland fill would be small. With implementation of mitigation described in Section 3.6.4 and the small quantity of wetlands permanently impacted by the South Alternative, impacts would be ***low.***

Similar to the North Alternative, indirect impacts on wetlands under the South Alternative would be ***low***.

Aquatic Influence Zones

Six structures for the South Alternative would be placed in areas defined as AIZs. One structure would be near the Blackfoot River, five structures would be in Mill Canyon. Impacts from vegetation removal within AIZs along the South Alternative would be the same as those under the North Alternative. The potential for increased erosion and sediment delivery to downstream waters, decreased woody debris recruitment locally, increases in stream temperatures, decreases in groundwater infiltration, and increased vectors for invasive species and noxious weeds could occur. Other impacts could include decreased infiltration of precipitation and decreased bank stability possibly increasing runoff and sediment loads to surface waters. Soil compaction associated with operating heavy machinery within AIZs could also occur potentially increasing runoff and sediment delivery. However, all structures would be in the buffer zones of the AIZs and would be located above the high water line of the streams. Additionally, implementation of mitigation would further protect AIZ resources (see Section 3.6.4). The South Alternative is not expected to result in temporary or permanent impacts on AIZs; impacts would be ***low***.

Operation and Maintenance Impacts

Operation and maintenance activities under the South Alternative would be same as described for the North Alternative. Maintenance vehicles would stay on established access roads and vegetation maintenance would be conducted in a manner that limits potential impacts on nearby waterbodies. Overall, ***no*** to ***low*** impacts on water resources, wetlands, and floodplains would occur during operation and maintenance of the South Alternative.

South Alternative Route Options

Impacts on water resources, floodplains, and wetlands from the Options 1, 2, and 3 would be the same as those under the South Alternative because the options would cross the same resource areas; ***low*** to ***moderate*** where new and improved access roads crossings require culverts or temporary work in wetlands and ***low*** where vegetation clearing or soil disturbance occurs. Unlike the South Alternative and Options 1, 2, and 3, permanent impacts under Option 4 would occur where the corridor would cross a large wetland complex and open water associated with Woodall Springs. The Woodall Springs wetland complex and open water bodies have been disturbed by various activities including mining (IDFG 1997). Access road construction requiring wetland fill could result in ***moderate*** to ***high*** impacts if roads are permanent.

3.6.4 Mitigation

The following mitigation measures have been identified to reduce or eliminate water resource, wetland, and floodplain impacts from the Project.

- Obtain all required permits with approved wetland delineations and compensatory mitigation plans prior to construction, and implement required wetland compensation in accordance with these plans and permits.
- Maintain erosion controls near waterbodies.
- Minimize the number of access road stream crossings during project planning.
- Minimize the project ground disturbance footprint, particularly in sensitive areas such as stream crossings and wetlands, and stream and wetland buffers and AIZs.
- Cease project construction near stream courses under high flow conditions, except for efforts to avoid or minimize resource damage.
- Locate refueling and servicing operations outside of AIZs. Use pumps, funnels, absorbent pads, and drip pans when fueling or servicing vehicles.
- Limit ground-disturbing activities to structure sites, access roads, staging areas, and the proposed substation site (see Section 3.1.4, Land Use).
- Use BMPs to limit erosion and the spread of noxious weeds (see Section 3.4.4, Vegetation).
- Apply herbicides according to the BPA Transmission System Vegetation Management Program EIS (DOE/EIS-0285) and label recommendations (see Section 3.4.4, Vegetation).
- Retain existing low-growing vegetation where possible (see Section 3.4.4, Vegetation).
- Leave erosion and sediment control devices in place until all disturbed sites are revegetated and erosion potential has returned to pre-project conditions (see Section 3.4.4, Vegetation).
- Decommission temporary roads according to the requirements and BMPs of the appropriate land management agency or landowner (see Section 3.4.4, Vegetation).
- Develop and implement erosion and sediment control plans (see Section 3.5.4, Geology and Soils).
- Design temporary and permanent access roads to control runoff and prevent erosion (see Section 3.5.4, Geology and Soils).
- Install sediment barriers and other suitable erosion and runoff control devices (see Section 3.5.4, Geology and Soils).
- Surface all permanent access roads with rock (see Section 3.5.4, Geology and Soils).

- Limit the amount of time soils are left exposed (see Section 3.5.4, Geology and Soils).
- Identify wetlands and other sensitive areas prior to initiating construction (see Section 3.7.4, Wildlife).
- Install a channel spanning bridge during the appropriate in-water work window (see Section 3.8.4, Fish).
- Design and construct culverts or bridges for access roads in a manner that allows fish passage (see Section 3.8.4, Fish).
- Limit road improvements to the minimum amount necessary (see Section 3.11.4, Transportation).
- Prepare and implement Spill Prevention and Response Procedures (see Section 3.13.4, Public Health and Safety).
- Provide spill prevention kits at designated locations on the project site (see Section 3.13.4, Public Health and Safety).
- Inspect equipment daily for potential leaks (see Section 3.13.4, Public Health and Safety).

3.6.8 Unavoidable Impacts Remaining after Mitigation

Unavoidable impacts on water resources would occur from vegetation clearing and soil disturbance within wetlands, streams, floodplains, and the AIZs, which may result in sedimentation of surface waters and localized alterations to water temperatures and wood recruitment.

3.6.9 No Action Alternative

Under the No Action Alternative, the Project would not be built, so water resources, wetlands, and floodplain impacts related to the construction, operation, and maintenance of the transmission lines would not occur.

3.7 Wildlife

3.7.1 Affected Environment

Wildlife Habitats and Species

The following section describes specific wildlife habitat types and wildlife species generally associated with these habitats that are found along the corridors for the North and South alternatives and their route options. Both special status and common wildlife species are identified, but special status wildlife species are discussed in greater detail later in Section 3.7.1.

Given the small (less than 10 miles at its widest point) distance between the two alternative corridors, the habitat types described below are generally found along both corridors. In addition, many common wildlife species are expected to be present throughout the project area and thus in the vicinity of both project corridors. However, the information below also identifies species that were documented during previous surveys specifically along a particular alternative.

Sagebrush-dominated and Basalt Outcrops

Sagebrush-dominated habitats within the project area provide potentially suitable habitat for a variety of species, including six special status bird species: greater sage grouse (*Centrocercus urophasianus*); Columbian sharp-tailed grouse (*Tympanuchus phasianellus columbianus*); ferruginous hawk (*Buteo regalis*); loggerhead shrike (*Lanius ludovicianus*); Brewer's sparrow (*Spizella breweri*); and sage sparrow (*Amphispiza belli*). Appendix F lists all wildlife species identified during wildlife and vegetation surveys of the project corridors. A detailed description of special status wildlife species are discussed below, as well as in Appendix G.

Other species that are typically associated with sagebrush habitats include a variety of common bird species including Swainson's hawk (*Buteo swainsoni*), burrowing owl (*Athene cunicularia*), sage thrasher (*Oreoscoptes montanus*), prairie falcon (*Falco mexicanus*), and western meadowlark (*Sturnella neglecta*) (Ritter 2000). Species of birds that are known to nest in sagebrush include Brewer's sparrow, vesper sparrow (*Pooecetes gramineus*), sage thrasher, sage sparrow, and western meadowlark. Other common species include black-tailed jackrabbits (*Lepus californicus*), coyote (*Canis latrans*), striped skunk (*Mephitis mephitis*), elk, mule deer, and sagebrush lizard (*Sceloporus graciosus*).

Species observed within sagebrush habitats during field surveys conducted in 2011 along the corridor for the North Alternative include red-tailed hawk (*Buteo jamaicensis*), killdeer (*Charadrius vociferous*), ring-necked pheasant (*Phasianus colchicus*), turkey vulture (*Cathartes aura*), cottontail rabbit (*Sylvilagus* sp.), mule deer, coyote, and striped skunk. Species observed within sagebrush habitats along the corridor for the South Alternative include mountain bluebird (*Sialia curricoides*), prairie falcon, sage grouse, and mule deer.

Basalt outcrops with native vegetation, another vegetation type identified within the project area, are confined primarily to agricultural lands in the southwestern portion of the area. These areas provide wildlife habitat for a similar suite of species to those that use native sagebrush habitat, although the habitat is typically more fragmented and of lower functional value.

Mountain shrub–dominated

Mountain shrub-dominated habitats within the project area provide potentially suitable nesting, brood-rearing, and wintering habitat for Columbian sharptail grouse, a special status species. Other species that are typically associated with this habitat type include birds such as lazuli bunting (*Passerina amoena*), yellow-breasted chat (*Icteria virens*), and various warbler species. Big game such as moose, elk, white-tailed deer, and mule deer likely also forage in these types of habitats.

Species observed within mountain shrub-dominated habitat during field surveys conducted along the North Alternative include red-tailed hawk, bald eagle, northern flicker (*Colaptes auratus*), Columbian ground-squirrel (*Urocitellus columbianus*), white-tailed deer, and moose. Bear scat was abundant in several mountain shrub-dominated areas during field surveys conducted along the South Alternative.

Grass-dominated

Grass-dominated habitats within the project area provide potentially suitable nesting and foraging habitat for long-billed curlew (*Numenius americanus*), and suitable nesting, brood-rearing, and winter habitat for Columbian sharp-tailed grouse. Both of these species are special status species. Greater sage grouse, another special status species, uses grass-dominated habitats near sagebrush for courtship displays and foraging.

Other species that are typically associated with grass-dominated habitats include Western meadowlark and Savannah sparrow (*Passerculus sandwichensis*) (Ritter 2000). Raptors, including the red-tailed hawk and bald eagle (*Haliaeetus leucocephalus*) frequently forage in these types of habitats. Common mammal species include coyote, mule deer, white-tailed deer, cottontail rabbits, striped skunks, and Columbian ground-squirrels.

Species observed within grass-dominated habitat along the corridor for the North Alternative include red-tailed hawk, bald-eagle, Columbian ground-squirrels, mule deer, white-tailed deer, cottontail rabbits, and striped skunks.

Aspen-dominated

Aspen-dominated habitats within the project area provide potentially suitable habitat for several special status species. Mature aspen stands in the area provide suitable nesting and foraging habitat for boreal owl (*Aegolius funereus*) and flammulated owl (*Otus flammeolus*), and suitable nesting habitat for northern goshawk (*Accipiter gentilis*) and three-toed woodpecker (*Picoides tridactylus)*. Aspen-dominated forests in the project area may also provide suitable nesting and foraging habitat for red-naped sapsucker (*Sphyrapicus nuchalis*), another special status species.

Mule deer, moose, and elk forage and winter in aspen stands, particularly at higher elevations in C-TNF. A variety of bird species also nest in these stands, particularly cavity-nesting species such as woodpeckers. Other bird species typically observed in aspen habitats include warbling vireos (*Vireo gilvus*), American robin (*Turdus migratorius*), American goldfinch (*Carduelis tristis*), dark-eyed junco, Townsend's solitaire (*Myadestes townsendi*), and black-capped chickadee (*Parus atricapillus*). Ruffed grouse (*Bonasa umbellus*) is another species for which aspen is a primary nesting habitat (Ritter 2000).

Wildlife species observed within aspen-dominated along the North Alternative include northern goshawk, three-toed woodpecker, northern flicker, ruffed grouse, great-horned owl (*Bubo virginianus*), snowshoe hare (*Lepus americanus*), white-tailed deer, black bear, moose, and yellow-bellied marmot (*Marmota flaviventris*).

Conifer-dominated

Conifer-dominated habitats within the project area also provide potentially suitable habitat for several special status species. Mature conifer forests within the area provide suitable nesting and foraging habitat for boreal owl, great gray owl (*Strix nebulosa*), and red-naped sapsucker, and suitable nesting habitat for northern goshawk and three-toed woodpecker. Mature conifer-dominated forested habitats may provide potentially suitable denning habitat for Canada lynx (*Lynx canadensis*), suitable foraging and/or migratory habitat for gray wolf, and suitable winter and spring foraging habitat for wolverine (*Gulo gulo*).

Other species typically associated with conifer forest habitat include snowshoe hare (*Lepus americanus*), pine squirrel (*Tamiasciurus hudsonicus*), chipmunk (*Tamias* sp.), and many species of migratory birds. Mule deer, white-tailed deer, elk, and moose also forage and winter in higher elevation stands and use the forested habitat as a migratory corridor. Bird species diversity is also typically high. Wildlife species observed using conifer-dominated forest habitats along the North Alternative include flammulated owl, northern goshawk, three-toed woodpecker, common raven (*Corvus corax*), ruffed grouse, great-horned owl, snowshoe hare, black bear, white-tailed deer, coyote, elk, moose, yellow-pine chipmunk (*Tamias amoenus*), and red fox.

Raptors such as red-tailed hawks were document in the South Alternative using canopy openings and nesting in snags. Other bird species observed within conifer-dominated forest habitats in the South Alternative include ruby-crowned kinglet (*Regulus calendula*), golden-crowned kinglet (*Regulus satrapa*), western wood pewee (*Contopus sordidulus*), mountain chickadee (*Parus gambeli*), black-capped chickadee, pine siskin (*Carduelis pinus*), northern flicker, downy woodpecker (*Picoides pubescens*), hairy woodpecker (*Picoides villosus*), American robin, Cassin's finch (*Carpodacus cassinii*), house wren (*Troglodytes aedon*), dark-eyed junco (*Junco hyemalis*), mountain bluebird, American kestrel (*Falco sparverius*), white-breasted nuthatch (*Sitta carolinensis*), and red-breasted nuthatch (*Sitta canadensis*).

Wetlands

Wetland habitats in the area provide potentially suitable habitat for several special status species including trumpeter swans (*Cygnus buccinators*), Columbian spotted frog (*Rana luteiventris*), Western boreal toad (*Bufo boreas boreas*), and common garter snake (*Thamnophis sirtalis*).

Wetland habitats within the area provide substantial habitat for migratory birds. Trumpeter swans and sandhill cranes (*Grus canadensis*) have been documented in the Blackfoot Reservoir and have been observed in and adjacent to Meadow Creek along the North Alternative. In addition, American white pelicans (*Pelecanus erythrorhynchos*) were observed foraging in the Blackfoot River and Reservoir. The area between the wetlands of the Gray's Lake National

Wildlife Refuge and the Blackfoot Reservoir is an important migratory corridor for these species. Bald eagles have also been observed soaring over the project area. Moose, elk, deer, and other game animals all use wetlands on C-TNF land for water during the dry summer months.

Wildlife species observed using wetland habitats along the North Alternative include sandhill crane, killdeer, northern flicker, mule deer, white-tailed deer, and leopard frog (*Rana pipiens*). Lincoln's sparrow (*Melospiza lincolnii*), song sparrow (*Melospiza melodia*), and yellow warbler (*Dendroica petechia*) have been documented in willows associated with the Blackfoot River along the South Alternative.

Big Game Habitat

Mule deer and Rocky Mountain elk are the two most visible big game species in the project area, particularly on C-TNF lands, and can be found there year-round, although they are not USFS Management Indicator Species (MIS). Moose also occur within the C-TNF. USFS (2003b) identified 18 percent of C-TNF as big game winter range habitat. Only 30 percent of the mule deer that summer in C-TNF actually use the winter range in CNF; most move to adjacent private and state-owned lands (USFS 2003a).

Regional studies conducted by Kuck (1984) found that most elk in southeastern Idaho tend to be nomadic but do not migrate long distances between summer and winter ranges. The mean year-round home range for elk was 26 square miles, with a mean migration distance between summer and winter ranges of 3.6 miles. Mule deer tend to migrate greater distances, typically about 13.7 miles, between summer and winter ranges. Moose tend to use the same small high-elevation forested home ranges year-round (mean=10 square miles).

USFS defines big game winter range as either critical or non-critical (USFS 2003a). Both contribute to a population's ability to maintain itself over the long term. Critical winter range is defined in part by the portion of the winter range where available forage and winter security is emphasized. It also is defined based on factors including the number of wintering animals, the proximity to threatened winter ranges, and the presence of species not meeting certain management objectives (USFS 2003a). Non-critical winter range are lands that are managed for multiple land use benefits, to the extent these land uses are compatible with maintaining or improving elk and deer winter range.

Based on data provided by the C-TNF, approximately 27.7 acres of non-critical big game winter range occur within the corridor of the North Alternative (see Map 3-8). No critical big game winter range was identified within the project corridor for the North Alternative. The South Alternative corridor crosses approximately 6.5 acres of non-critical big game winter range. No critical big game winter range was identified within the South Alternative corridor.

During surveys conducted in the corridor for the North Alternative, elk and signs of elk presence were frequently documented throughout the aspen- and Douglas-fir-dominated stands in C-TNF. Elk and moose were observed on several occasions crossing exposed southern-aspect slopes in the early morning. During winter surveys, bedding areas were frequently documented in dense aspen stands with gentle slopes. Mule deer and mule deer sign were also observed in C-TNF, although not as frequently as elk or moose. Mule deer tracks were also observed on state and BIA lands in sagebrush habitats.

On C-TNF lands, forested habitats provide important cover, while undisturbed open areas provide migratory habitat. All habitat types identified within the project area represent either suitable migratory or cover habitat for elk and mule deer. C-TNF and BLM lands represent suitable winter range habitat for mule deer, elk, and moose. Sagebrush and grassland habitats on state and BIA lands provide suitable wintering habitat for mule deer. Wetland and riparian habitats provide water sources and forage during dry summer months.

Special-status Wildlife Species

Special-status species are those that have been identified for protection under federal or state laws. These include species listed under the federal ESA as endangered, threatened, or candidate, and/or as MIS by the USFS, species listed as sensitive (Type 1 through Type 4) by the BLM, and/or species listed as endangered, threatened, or otherwise protected by the state of Idaho. Table 3-18 lists the special status wildlife species that are known or expected to occur in or near in the project area and specifies the likelihood of occurrence. This following provides more information on the potential presence of both federally listed species and other special status species along the project corridors. Detailed descriptions of these special status wildlife species are included in Appendix G.

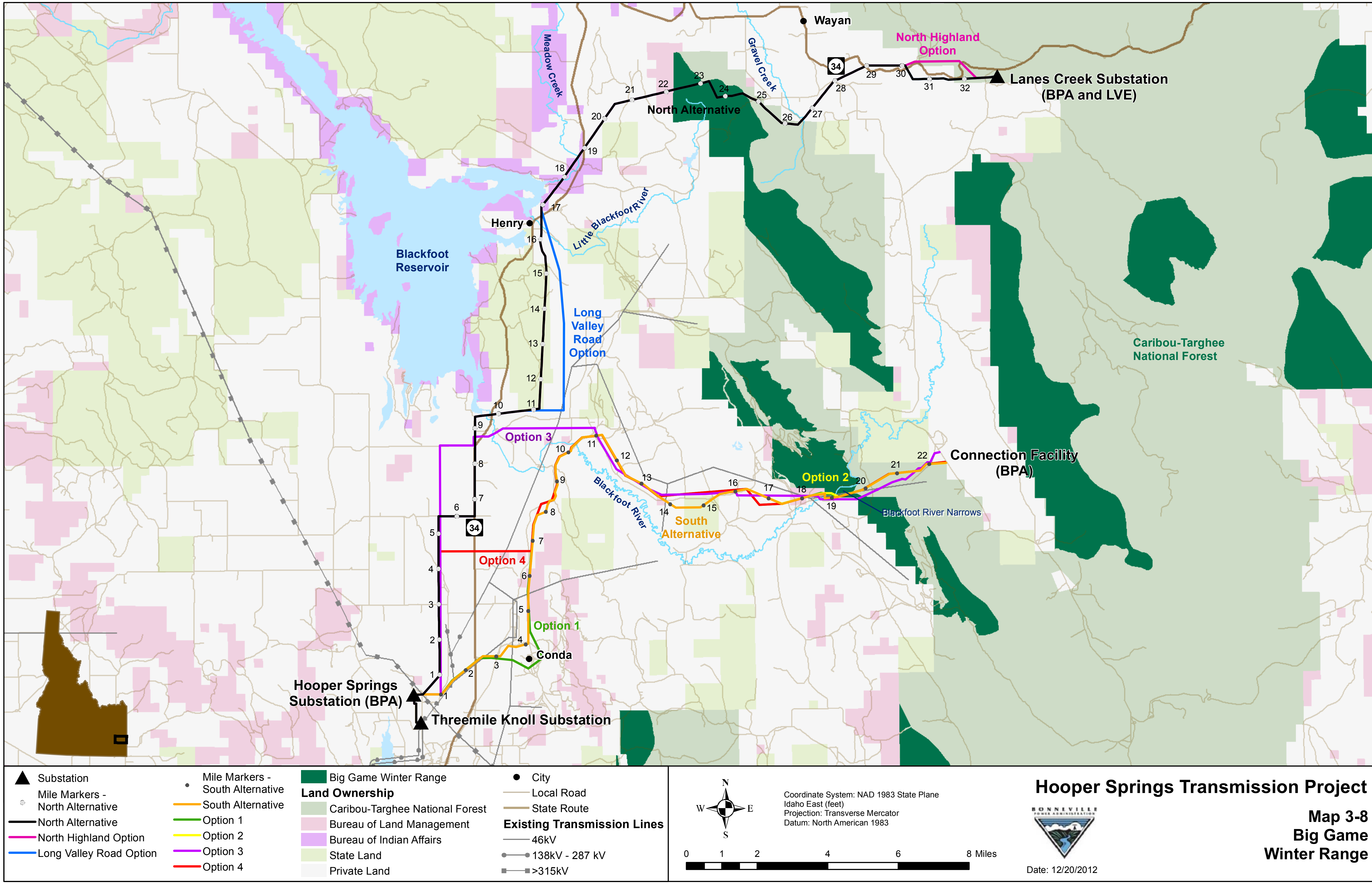

Wayan
North Highland Option
Lanes Creek Substation (BPA and LVE)
North Alternative
Meadow Creek
Gravel Creek
Henry
Little Blackfoot River
Blackfoot Reservoir
Long Valley Road Option
Caribou-Targhee National Forest
Option 3
Connection Facility (BPA)
Option 2
Blackfoot River
Blackfoot River Narrows
South Alternative
Option 4
Option 1
Conda
Hooper Springs Substation (BPA)
Threemile Knoll Substation
Substation
Mile Markers - North Alternative
North Alternative
North Highland Option
Long Valley Road Option
Mile Markers - South Alternative
South Alternative
Option 1
Option 2
Option 3
Option 4
Big Game Winter Range
Land Ownership
Caribou-Targhee National Forest
Bureau of Land Management
Bureau of Indian Affairs
State Land
Private Land
City
Local Road
State Route
Existing Transmission Lines
46kV
138kV - 287 kV
>315kV
Coordinate System: NAD 1983 State Plane Idaho East (feet)
Projection: Transverse Mercator
Datum: North American 1983
0 1 2 4 6 8 Miles
Hooper Springs Transmission Project
Map 3-8
Big Game Winter Range
Date: 12/20/2012

Table 3-18. Special-status Wildlife Species and their Potential to Occur within the Project Area

Species	Federal ESA Status[1]	USFS Region 4 (R4) Status[2]	BLM Status[3]	State Status[4]	Habitat Requirements	Potential for Occurrence
Birds						
Yellow-billed cuckoo	C (not reported in Caribou County)	None	Type 1	PNG	Dense willow understory with mature cottonwoods and generally within 100 meters of slow or standing water (Gaines and Laymon 1984).	Low
Bald eagle	None	S	Type 2	PNG	Closely associated with lakes and large rivers in open areas, forests, and mountains. Nest near open water in late-successional forest with low levels of human disturbance (McGarigal 1988; Wright and Escano 1986).	High
Boreal owl	None	S	None	PNG	Nesting habitat consists of forests with a relatively high density of large trees, an open understory, and a multi-layered canopy (Hayward and Verner 1994).	High
Great gray owl	None	S	None	PNG	Mixed coniferous forests, usually bordering meadows or small open areas in the forest (Hayward and Verner 1994).	High
Flammulated owl	None	S	Type 3	PNG	Secondary cavity nesters (Hayward and Verner 1994) that typically prefer ponderosa pine habitat, but also use Douglas-fir, aspen, and limber pine habitat (Linkhart and Reynolds, 1997).	High
Northern goshawk	None	S/MIS	None	PNG	Mature to old forest stands with relatively large-diameter trees and high canopy closure (Hayward and Escano 1989; Siders and Kennedy 1996).	High

Species	Federal ESA Status[1]	USFS Region 4 (R4) Status[2]	BLM Status[3]	State Status[4]	Habitat Requirements	Potential for Occurrence
Three-toed woodpecker	None	S	None	PNG	Mature stands of spruce/fir and lodgepole pine (Imbeau and Desrochers 2002). Snags preferred for nesting and foraging.	High
Columbian sharp-tailed grouse	None	S/MIS	Type 3	G	High quality shrub/meadow steppe, primarily grasslands and open-canopy sagebrush (Moyles 1981).	High
Greater sage grouse	C	S/MIS	Type 2	G	Prefer relatively tall sagebrush for nesting areas and open sites surrounded by sagebrush for lekking (Connelly et al. 2000).	High
Peregrine falcon	None	S	Type 3	T	Typically nest on large cliffs less than 9,500 feet in elevation, and in areas closely associated with open water, wetlands, and riparian habitat (Cade 1982).	High
Trumpeter swan	None	S	Type 3	G	Lakes and ponds and adjacent marshes containing sufficient vegetation and nesting locations (Mitchell 1994).	High
Ferruginous hawk	None	None	Type 3	PNG	Nest on cliffs and small trees (typically, junipers less than 30 feet tall) in dry habitats (Bechard et al. 1990).	Low
Loggerhead shrike	None	None	Type 3	PNG	Sagebrush-steppe habitats in southern Idaho. Nesting occurs in both shrubs and trees (Woods and Cade 1996).	Low
Long-billed curlew	None	None	None	PNG	Prairies and grassy meadows, often near water (Groves et al. 1997).	Low
Brewer's sparrow	None	None	Type 3	PNG	Prefers to nest at mid-level in tall, living sagebrush plants (Schroeder and Sturges 1975).	Low

Species	Federal ESA Status[1]	USFS Region 4 (R4) Status[2]	BLM Status[3]	State Status[4]	Habitat Requirements	Potential for Occurrence
Sage sparrow	None	None	Type 3	U	Typically nest in the canopy of the peripheral smaller branches of larger sagebrush plants (Reynolds 1981; Rich 1980).	Low
Mammals						
Canada lynx	FT	None	Type 1	T	Boreal forest habitats. Strongly ties to abundance and distribution of snowshoe hare (Koehler and Brittell 1990).	Low
Gray wolf	None	S	Type 1	G	Variety of habitats, including coniferous forests, montane meadows, and shrub-steppe. Key components include a sufficient year-round prey base; suitable and semi-secluded denning and rendezvous sites; and sufficient space with minimal exposure to humans (USFWS et al. 2002).	Low
Wolverine	C	S	Type 3	PNG	High mountain forests of dense conifers, primarily in true fir (*Abies* sp.) cover types as well as subarctic-alpine tundra (Groves et al. 1997).	Moderate
Pygmy rabbit	None	S	Type 2	G	Sagebrush obligate species that typically inhabits either big sagebrush and rabbitbrush communities with deep soil for digging burrows, or rocky habitats (Green and Flinders 1980).	Low
Amphibians						
Columbia spotted frog	C (not in Bonneville or Caribou counties)	S	Type 1	PNG	Mountainous areas near cold, slow moving streams, springs, or marshes where emergent vegetation is not extensive (USFS 2007b).	Low

Species	Federal ESA Status[1]	USFS Region 4 (R4) Status[2]	BLM Status[3]	State Status[4]	Habitat Requirements	Potential for Occurrence
Western (boreal) toad	None[5]	S	Type 3	PNG	Variety of habitats, including wetlands, forests, sagebrush meadows, and floodplains from sea level to 12,000 feet in elevation (Maxell 2000).	High
Reptiles						
Common garter snake	None	None	Type 3	U	Prefer densely vegetated habitats along pond margins where they can sun, feed, and find cover (Groves et al. 1997).	Moderate

[1] USFWS Classification (USFWS 2011): FE = federal endangered; FT = federal threatened; SC = species of concern; C = candidate.

[2] USFS C-TNF Status (USFS 2011a): S = Sensitive—Plant or animal species which are susceptible to habitat changes or impacts from activities; MIS = Management Indicator Species—A wildlife species whose population indicate the health of the ecosystem in which it lives and, consequently, the effects of forest management activities to that ecosystem. MIS are selected by land management agencies.

[3] BLM Special-status Species Types (BLM 2011b): Type 1—species federally identified as threatened, endangered, proposed, candidate, or species designated by the BLM State Director as sensitive; Type 2—species that have a high likelihood of being listed in the foreseeable future due to their global rarity and significant endangerment factors; Type 3—species that are globally rare or very rare in Idaho, with moderate endangerment factors; their global or state rarity and the inherent risks associated with rarity make them imperiled species; Type 4—species that are generally rare in Idaho with small populations or localized distribution and currently have low threat levels; however, due to the small populations and habitat area, certain future land uses in close proximity could significantly jeopardize these species.

[4] IDFG Status (IDFG 2011f and g): E = endangered; T = threatened; G = game species; PNG = protected non-game species; U = unprotected; P = predatory

[5] On April 11, 2012, USFWS published a 90-day finding that the listing of the Southern Rocky Mountain population of boreal toads may be warranted; therefore, they are currently undergoing a 12 month review of this species.

Federally Listed Species

Although no federally listed or candidate wildlife species were observed during field surveys, habitat for several species is found within the project area. Federally listed species that could occur in the area include the federally threatened Canada lynx and three candidate species: yellow-billed cuckoo (*Coccyzus americanus occidentalis*), greater sage grouse, and wolverine. Below is a description of the ESA-listed and candidate species and species protected under the Bald and Golden Eagle Protection Act (BGEPA) identified as potentially occurring within the study area.

Canada lynx—USFS has not designated any lynx analysis units within the area; however, the Project is within an area that has been designated as linkage habitat by USFS (2007a). Suitable foraging habitat for lynx occurs in the project area on C-TNF lands. However, the potential for lynx to occur in the area is low.

Yellow-billed cuckoo—There have been no documented occurrences of yellow-billed cuckoo within 2 miles of the project corridor (IDFG 2011b) and it is not on the USFWS ESA candidate species list for Caribou County. Suitable dense willow and willow-dogwood habitat exists along the Blackfoot River crossing on the east side of the corridor for the South Alternative. Little habitat exists for the yellow-billed cuckoo within the corridor for the North Alternative, and none were observed during wildlife surveys conducted in 2011.

Greater sage grouse—The greater sage grouse is listed as a USFS MIS for sagebrush habitats. It is also a BLM Type 2 special status species and an IDFG game species. The greater sage grouse has a high potential for occurrence in sagebrush areas within the project area. Most of the sagebrush-dominated habitats within the area provide potentially suitable habitat for sage grouse lekking, nesting, brooding, and/or wintering. Lek surveys were conducted on state and BIA lands. No sage grouse surveys were conducted on USFS land because there are no known leks and suitable habitat does not exist.

A previously documented sage grouse lek site is located approximately 1,500 feet west of the corridor for the North Alternative on the large piece of state-owned land east of the Blackfoot Reservoir (IDFG 2011b). Lek surveys were conducted at this lek on three occasions in 2011, and no evidence of sage grouse, feathers, droppings, or tracks was observed. A second documented sage grouse lek site is also located west of the corridor for the North Alternative near the previously described lek (IDFG 2011b). Surveys of this lek were conducted several times and no evidence of sage grouse, feathers, droppings, or tracks was observed. This lek is approximately 30 feet wide, and is located adjacent to an OHV track.

A sage grouse was flushed during raptor surveys on C-TNF land in 2007 on the west side of the South Alternative corridor, and a lek site was observed near the eastern boundary of the corridor for the South Alternative. Sage grouse droppings were found in areas where the South Alternative crosses BLM parcels, and a lek was discovered adjacent to the South Alternative corridor close to the easternmost BLM parcel.

Wolverine—The wolverine has a moderate potential for occurrence within the project area. USFS aerial surveys conducted in 2002 reported wolverine trails in the snow in mountains east of Soda Springs (IDFG 2011b). There have also been documented historical observations of wolverines approximately 2 miles south of the area in drainage on C-TNF land northeast of Henry Peak (IDFG 2011b). Recently, an unconfirmed wolverine sighting was made near Enoch Valley (Green 2011, personal communication). Surveys conducted within the project area did not identify any wolverine tracks, suitable denning habitat, or signs of denning activity. None of the high-elevation subalpine habitats within the project area provide suitable conditions for wolverine denning. The area also does not provide significant migratory habitat, as it is situated near the northern end of the Gray's Range, and does not provide habitat connectivity to the north. The area likely provides potentially suitable winter and spring foraging habitat for wolverines.

Bald eagle—The bald eagle is listed as sensitive by USFS, as a BLM Type 2 special status species, and as a protected non-game species by IDFG. They are also specifically protected by Bald and Golden Eagle Protection Act (BGEPA). In addition to ESA, BGEPA, and the various agency laws, the Migratory Bird Treaty Act (MBTA) offers additional protection to certain avian species (see Chapter 4 Consultation, Review and Permit Requirements). Bald eagle habitat suitability within the project area is high. Suitable foraging habitat exists within the area in open water habitats, meadows, and roadways. Suitable nesting habitat also occurs throughout the forested habitats within the project area, due to the abundance of large snags and perch trees. Bald eagles were observed on several occasions foraging within the area, and are known to winter in several areas of the C-TNF (Tincup, Diamond Creek, Narrow/Land Creek, and Crow Creek). No nests have been documented within 1 mile of the project corridor (IDFG 2011b), but a nest was identified approximately 1.5 miles east of the North and South alternatives. This was an active nest, with a fledgling in the nest and an adult observed foraging in the vicinity. The nest is topographically blocked from the alternatives.

Other Special Status Species

Several other special status species have the potential to occur in the project area. During field surveys along the corridor for the North Alternative the only special status species observed in the immediate area were the three-toed woodpecker, flammulated owl, and northern goshawk. Vocalization surveys conducted on C-TNF lands within the corridor of the North Alternative documented one three-toed woodpecker, a USFS sensitive species and an IDFG protected non-game species, adjacent to a trail at the base of a mature Douglas-fir stand. The bird was observed to be foraging in a live aspen tree; however, there was no response to any of the vocalization calls. Vocalization surveys on C-TNF lands also documented one flammulated owl response within a dense stand of Douglas-fir. The flammulated owl is a USFS sensitive species, BLM Type 3 special status species, and an IDFG protected non-game species. Vocalization surveys documented one northern goshawk response within a dense stand of Douglas-fir. A northern goshawk was also heard during forest inventory surveys from a location approximately 3,500 feet south of the first response, in the same mixed aspen/conifer stand. The northern goshawk is a USFS sensitive species, an MIS for mature and old forest habitats, and an IDFG-protected non-game species.

Special status species observed during field surveys along the corridor for the South Alternative were the northern goshawk and the three-toed woodpecker. Additional follow-up surveys will be conducted along the South Alternative in spring/summer 2013 to confirm species presence or absence. These surveys will be focused on special status species, but will further document and describe any common species that are identified as well.

As shown in Table 3-18, and discussed in greater detail in Appendix G, in addition to the species with federal status discussed above, four birds have high potential for occurrence in the project area. These are the boreal owl, great gray owl, peregrine falcon (*Falco peregrinus*), and trumpeter swan. In addition, five birds (ferruginous hawk, loggerhead shrike, long-billed curlew, Brewer's sparrow, and sage sparrow) have a low potential for occurrence. All of these bird species are protected under the MBTA. Two mammals, the gray wolf and pygmy rabbit (*Brachylagus idahoensis*), have low potential for occurrence. Amongst special status reptiles and amphibians, the western boreal toad has a high potential for occurrence and the common garter snake has a moderate potential.

Alternative Route Options

North Alternative Route Options

The Long Valley Road Option includes wildlife habitat associated with grassland, sagebrush-dominated, and wetland habitat as described above. The other portions of this option include cultivated and grazing lands, which do not provide substantial wildlife habitat.

The North Highland Option includes wildlife habitat associated with grassland, sagebrush-dominated, aspen-dominated, and some conifer-dominated habitat as described above.

South Alternative Route Options

Options 1 through 4 include wildlife habitat associated similar to that described above for the South Alternative. Compared to Options 1 and 2, Options 3 and 4 cross more cultivated and grazing lands, which do not provide substantial wildlife habitat.

3.7.2 Environmental Consequences of the North Alternative

Impacts on wildlife would include short- and long-term habitat modification associated with habitat clearing for project construction. Additional impacts would include short-term disturbance from noise and human activity during construction; incidental mortality during construction; increased risk of avian collisions with transmission line conductors, overhead ground wires (shield), and guy wires; and increased human access due to access road creation and improvement.

Wildlife Habitat Impacts

The majority of the North Alternative corridor would traverse grassland and sagebrush-dominated habitat with no tall-growing vegetation, and most low-growing vegetation in these areas would not be removed. However, trees and tall-growing woody vegetation would be cleared within the transmission line ROW to prevent vegetation from coming close enough to the conductors to cause an electric arc or interfere with the conductors. Approximately 38.8 acres of wildlife habitat associated with aspen-dominated forest and 64.8 acres of habitat associated with conifer-dominated forest would be cleared as a result of construction. The majority of the tree removal would occur in C-TNF, though some would also occur on BLM parcels. While acres of impact are relatively low compared to overall habitat area on project area lands, the impact on the wildlife habitat where the corridor of the North Alternative crosses would be ***moderate*** to ***high***. Approximately 11.8 acres of aspen-dominated forest and 21.6 acres of conifer-dominated forest would be permanently lost as a result of construction of new permanent access roads and structure footings. The remaining 27.0 acres of aspen-dominated forest and 43.2 acres of conifer-dominated forest would be converted from forested habitats to low-growing emergent and mountain shrub vegetation in the ROW.

Permanent tree removal in forested areas for the North Alternative ROW would result in habitat fragmentation and edge effects that can cause changes in the vegetation composition, increase potential for the spread of noxious weeds, and increase susceptibility to blowdown for trees located at the edge of a cut. Habitat fragmentation would reduce habitat suitability for species such as wolverine, lynx, and gray wolf, which require large tracts of relatively undisturbed habitat for migration and foraging. Fragmentation could also reduce the ability for small and/or less mobile species to disperse and can serve to isolate populations. The impact from habitat fragmentation to wildlife species present in the North Alternative corridor would be ***moderate***.

Edge effects could reduce habitat suitability for species such as boreal owl, great gray owl, flammulated owl, northern goshawk, and three-toed woodpecker, which require old and mature forest habitat conditions. However, the location of the North Alternative corridor would closely follow the boundary of C-TNF and associated forest habitat, which would limit the effect of increasing habitat edges and fragmenting habitat. Conversion of forested habitat within the transmission line ROW and along access roads to low-growing vegetation could provide for increased foraging habitat for big game animals such as deer, elk, and moose, but would also provide reduced cover for these species. Raptors would likely have increased foraging habitat in areas where forested habitats are converted to low-growing vegetation.

Tree and snag removal along the North Alternative corridor within forested stands of Douglas-fir and quaking aspen would remove potential cavity nesting trees for boreal owl, great gray owl, flammulated owl, northern goshawk, and three-toed woodpecker. Removal of live trees within the ROW and access roads would also reduce the overall number of trees that could become snags in the future, a ***low*** to ***moderate*** long-term impact on cavity nesting birds.

Within non-forested wildlife habitats, the North Alternative would have mostly short-term, ***low*** impacts as a result of vegetation clearing or crushing because temporarily affected vegetation would be expected to grow back within two growing seasons. The North Alternative’s long-term impacts on wildlife habitat associated with non-forested vegetation communities would also be ***low*** because, although some wildlife species would be permanently displaced, only approximately 77.2 acres of habitat would be permanently lost due to vegetation removal from structures and permanent access roads. These habitat types are not particularly rare or limited within the project area or region.

<u>Construction Noise Impacts</u>

Human activity and noise levels would be elevated during construction of the North Alternative in the immediate vicinity of each structure site, at conductor pulling and tensioning sites, and during access road construction from construction equipment, vehicles, blasting, human presence, and helicopters. Construction noise and noise from other human activity can result in a variety of impacts on wildlife species, including displacement from occupied habitats, interference with hearing ability in songbirds and mating and alarm calls in amphibians and ground squirrels, and disruption of raptor foraging activities (Madsen 1985; Van der Zande et al. 1980; Fyfe and Olendorff 1976). Noise levels would be temporarily elevated within the corridor of the North Alternative during the construction, but the sound levels would decrease to ambient conditions within a relatively short distance from the construction area. Noise levels are expected to decrease to ambient levels within a half mile of routine construction activities; whereas, blasting and helicopter use would be audible a mile away, but short in duration. Increased noise levels would also only occur during the day, when construction is actively occurring. Some temporary displacement of wildlife from otherwise usable habitat would likely occur in the immediate vicinity of construction work areas during the construction period. The degree of displacement would generally be proportional to the change in noise levels and the type of activity. If wildlife species were temporarily displaced at a critical time, such as during the breeding season, it could result in impacts on reproductive success. For this reason, temporary construction-related noise impacts would be expected to have a short-term, ***moderate*** impact on wildlife species.

Incidental Mortality and Disturbance

Operation of heavy equipment and vegetation removal activities could result in incidental mortality of less mobile species of wildlife that are present in the corridor of the North Alternative. Larger, more mobile species that are able to leave the area, such as birds and medium and large mammals would probably do so. Small mammals, amphibians, and reptiles that typically retreat to shallow burrows or other hiding places to escape danger would be most likely to suffer incidental mortality related to construction equipment and tree-clearing activities. There is also a potential for mortality to nesting bird species as ROW trees and shrubs are cleared. To avoid the potential for incidental mortality of nesting migratory birds, construction timing restrictions would be implemented as described in Section 3.7.4. With implementation of mitigation measures to reduce incidental mortality of eggs or fledgling birds, the impact would be ***low*** and short term.

There is also a potential for an increase in vehicle collisions from construction-related traffic on existing roads, and from vehicle traffic on new permanent access roads. Species most likely to be affected by vehicle collisions are scavenging birds and mammals that feed on or along roadsides. Big game species such as mule deer, elk, and moose could also be affected. Road development and use causing disturbance and mortality on wildlife and wildlife habitat has been previously documented (Trombulak and Frissell 2000; BLM and USFS 2001). New and improved access roads along the transmission line would improve public access within the corridor of the North Alternative, and could result in more human use of lands in the immediate vicinity, although all new access roads would be gated to reduce their use by OHV users.

Potential indirect road-related impacts on wildlife include the increased spread of noxious weeds, resulting in reduced wildlife habitat suitability; increased erosion and siltation at stream crossings, resulting in reduced water quality for wildlife; increased illegal poaching of game animals (Cole et al. 1997) and target shooting of small animals (Ingles 1965); and, intentional harassment or chasing of animals. Increased incidence of human caused-fires and removal of standing and down wood for firewood or other personal uses, which removes potential nesting trees and snags, are potential indirect road-related impacts on wildlife. These indirect impacts can result in habitat loss or modification.

The increased presence of OHVs using new permanent access roads can result in disturbance and displacement of wildlife, including stress, disruption of normal foraging and reproductive habits, abandonment of unique habitat features, and increased energy expenditure (Trombulak and Frissell 2000). These factors can contribute to reduced over-winter survival for individuals, poor conditions entering the breeding season, reduced reproductive success and recruitment, and, depending on the extent, eventual local population declines (Trombulak and Frissell 2000; Wisdom et al. 2000). All permanent access roads on USFS, BLM, and BIA lands would be gated and closed to public use; therefore, the indirect impact of access roads associated with the North Alternative would be ***low***.

Avian Disturbance and Collisions

Typically high voltage transmission lines, such as the North Alternative, do not pose an electrocution risk to birds because the spacing between conductors is greater than the wingspan of birds(APLIC 2006; USFWS 2005). The presence of transmission structures, conductors, and most importantly overhead ground and guy wires could create collision hazards for flying birds, especially where the lines cross sensitive flyways or high use areas. Since the proposed structures would be large and visible to birds, it would be unlikely that the structures would be a large collision risk (APLIC 1994); however, the wires could still pose a risk, in particular the overhead ground and guy wires because they would be harder to see (APLIC 1994).

There are three factors that generally influence the risk of collision: the avian species in question including the age and health of the individual; environmental factors such as weather and time of day; and the configuration and placement of the transmission line itself (APLIC 1994; USFWS 2005). Raptors collisions are infrequently reported because their flight is slow, they are highly maneuverable, and they do not fly in large flocks. Large, heavy bodied birds such as waterfowl and cranes are much more susceptible to transmission line collisions (APLIC 1994).

As part of the planning process, BPA has proposed to site the transmission line to reduce the potential for avian collisions. For example, on the northeast portion of the North Alternative (between line miles 24 and 26), BPA has sited the line along the C-TNF boundary heading south. This siting was done to avoid bisecting the wet meadow complexes that are important bird areas for sandhill cranes and other species that use the Grays Lake National Wildlife Refuge.

In order to analyze the potential for avian collisions with the North Alternative, an avian collision risk model was used (Heck 2007). The model considered productive bird areas, and surveyed wetland and stream locations and topography to develop a risk assessment along the corridor of the North Alternative. In addition, one of the driving factors for collision risk was the number of overhead ground wires (because they are less visible). The results of the assessment indicate that there are a number of areas based on the collision factors described above that could present a high collision risk for avian species. Many of these areas are associated with wetland and water features and the important flyways for swans and cranes from the nearby Grays Lake

National Wildlife Refuge and Blackfoot Reservoir. As a result of the analysis, collision impacts on migratory birds could be long term and ***moderate*** to ***high***.

Although potential avian collision impacts are moderate to high, BPA would minimize collision risk through the installation of visibility enhancement devices in the areas of highest collision risk. BPA would use the results of the avian model combined with expert opinion to determine the best locations to install markers. Visibility enhancement devices, such as bird flight diverters and other devices have been shown to greatly reduce the risk of collision on new transmission lines (APLIC 1994; USFWS 2005). According to APLIC (1994), bird flight diverters, which increase visibility to birds, have been shown to reduce collisions by 57 to 89 percent when installed on overhead ground wires. The installation of bird flight diverters on overhead ground wires in areas determined to represent the highest risk of avian interactions would reduce the potential for collisions and the overall risk of avian collisions to a ***low*** to ***moderate*** level.

Big Game Habitat

All habitat types identified within the corridor of the North Alternative represent suitable habitat for elk and mule deer during seasonal migrations. C-TNF lands represent suitable winter range habitat for mule deer, elk, and moose. Sagebrush and grassland habitats on state, BLM, and BIA lands provide suitable wintering habitat for mule deer. Wetland and riparian habitats provide water sources and forage during dry summer months.

Construction of the North Alternative would result in long-term impacts on C-TNF designated non-critical big game winter range habitat that intersects the project corridor. Short-term impacts would be limited to temporary vegetation removal or disturbance in non-forested habitats, and would quickly recover. Long-term impacts would result from access road construction and forest clearing within the transmission line and access road ROWs. These disturbances would further fragment the forested habitat within the project area and could affect movements of big game animals within the corridor of the North Alternative. However, the Henry Cutoff Road is a much more significant north–south barrier to movement within the area because of traffic and human activity, and the additional fragmentation that would be associated with the Project would not be expected to be a significant barrier to big game movements. The movement of individual big game animals is most likely to be hindered, if at all, during periods of high snowfall. Corridors of undisturbed habitat within the vicinity of the corridor of the North Alternative would remain as routes for individual big game animals to circumvent project disturbances. Route diversions, if longer than preferred routes in winter, may stress the energy reserves of some individuals. While some individual game animals could be affected, this likely would not result in any measurable impact on any big game species population; the impact on game animals associated with the construction of the North Alternative would be ***low***.

Special-status Wildlife Species

Appendix G describes the specific impact and level of impact for all species known or expected to occur in the project area and potentially impacted by the North Alternative. Appendix G includes federally listed and candidate species, USFS MIS, and BLM and state sensitive species. Table 3-19 summarizes the North Alternative's potential level of impacts on special status wildlife species. Described below are the ESA-listed or ESA candidate species and BGEPA species that the Project could impact.

Table 3-19. Summary of Impacts on Special Status Species

Species	Impact[1] North Alternative	Impact[1] South Alternative
Birds		
Yellow-billed cuckoo	No effect	No effect
Bald eagle	Low	Low
Boreal owl	Low	Low
Great gray owl	Low	Low
Flammulated owl	Low	Low
Northern goshawk	Low	Low
Three-toed woodpecker	Low	Low
Columbian sharp-tailed grouse	Low	Low
Greater sage grouse	Low	Low
Peregrine falcon	Low	Low
Trumpeter swan	Low	Low
Ferruginous hawk	No effect	No effect
Loggerhead shrike	No effect	No effect
Long-billed curlew	Low	Low
Brewer's sparrow	Low	Low
Sage sparrow	Low	Low
Mammals		
Canada lynx	No effect	No effect
Gray wolf	No effect	No effect
Wolverine	Low	Low
Pygmy rabbit	No effect	No effect
Amphibians		
Columbia spotted frog	No effect	No effect
Western (boreal) toad	Low	Low
Reptiles		
Common garter snake	Low	Low

[1] A description of the specific impact and impact level are described in detail in Appendix G.

Greater sage grouse—Construction of the North Alternative would result in short-term impacts on 14.9 acres of sagebrush habitat and approximately 53.4 acres of long-term impacts on sagebrush habitat. These long-term impacts would reduce the amount of available sagebrush habitat for Greater sage grouse. However, sufficient amounts of suitable sagebrush habitat would remain functional at both the local and range-wide scales to maintain the viability of this species. Any grouse within the immediate project vicinity may be displaced temporarily during construction due to temporarily elevated construction noise and increased human presence. Displacement of grouse could potentially temporarily increase predation as they seek out alternative suitable habitat. While some individual birds may be impacted, the impact on the species would be ***low*** from the North Alternative.

Columbian sharp-tailed grouse—Like the sage grouse, the sharp-tailed grouse uses sage brush habitat which would be impacted. However, the sharp-tailed grouse is also known to occur in grasslands, mountain-shrub, aspen, and riparian dominated habitats (Marks and Marks 1987; Ulliman 1995; Apa 1998; and Giesen and Connell 1993). Construction of the North Alternative would result in short-term impacts on 3.6 acres of grassland, 0.1 acre of mountain-shrub, 1.8 acres of aspen, and 0.4 acre of wetland habitat of which some would be riparian. The North Alternative would result in permanent impacts on 0.8 acre of mountain-shrub, 22.1 acres of grassland, 38.8 acres of aspen, and 0.8 acre of wetland habitat. These long-term impacts would reduce the amount of available habitat for the sharp-tailed grouse; however, the sharp-tailed grouse is a habitat generalist and sufficient amounts of suitable habitat would remain functional at both the local and range-wide scales to maintain the viability of this species. Any grouse within the immediate vicinity may be displaced temporarily during construction due to temporarily elevated construction noise and increased human presence. Displacement of grouse could potentially temporarily increase predation as they seek out alternative suitable habitat. While some individual birds may be impacted, the impact on the species would be ***low*** from the North Alternative.

Wolverine—Documented sightings of the wolverine within the area indicate that the corridor for the North Alternative would provide suitable foraging habitat. Impacts on forested habitats for project construction and operation would further fragment existing habitat, reducing its suitability for wolverine foraging. Since sufficient foraging habitat would remain functional at both the local and range-wide scales to maintain the viability of the species, project-related impacts would be ***low***.

Bald eagle—The bald eagle has been documented in the general area of the corridor for the North Alternative. Noise during project construction could disturb or displace nesting or roosting bald eagles temporarily, but no nests have been documented within 1 mile of the corridor for the North Alternative. A nest was documented on private lands north of Soda Springs, about1.5 miles southeast of the southern end of the North Alternative. The nest would be within Zone III under the Bald Eagle Management Plan for the Greater Yellowstone Area (Greater Yellowstone Bald Eagle Working Team, 1983). Zone III includes all potential foraging habitats within a 2.5 mile radius of the nest and calls for all utility lines in this zone to be limited and restricted to locations where the potential for eagle collisions and electrocutions is minimal. The primary focus of this management zone is to maintain adequate foraging conditions and aid in maintaining the integrity of Zones I and II. As discussed above, under the avian disturbance and collisions discussion, the North Alternative would not pose an electrocution risk to bald eagles.

Furthermore, the North Alternative does not bisect the nest from any prime foraging habitat or cross any prime foraging habitat. The avian collision risk model discussed above found the area within 2.5 miles of the bald eagle nest to have relatively low collision risk.

Clearing of forested vegetation could remove potentially suitable nesting or perching trees, but would not directly impact foraging habitat. During project construction, bald eagles would most likely avoid the immediate area, due to noise and human presence; therefore, incidental mortality is not likely to occur. Even though some potential bald eagle habitat may be impacted through forest clearing, sufficient habitat would remain functional at both the local and range-wide scales to maintain the viability of the species. Therefore, impacts under the North Alternative on bald eagles would be ***low***.

Operation and maintenance of the North Alternative would require regular vegetation maintenance to ensure that tall-growing woody vegetation does not grow in the ROW and that permanent access roads remain drivable. Maintenance could include mowing, herbicide application, and mechanical cutting. Personnel conducting transmission line repair and patrols would occasionally be present within the North Alternative ROW and on access roads. As such, project operation and maintenance would have a ***low*** impact on wildlife because routine maintenance could result in temporary disturbance of wildlife including nesting birds and wintering big game. Some bird nests may be lost or wintering big game disturbed depending upon the time of year maintenance occurs. Minimal impacts would be expected because the duration of maintenance activities would typically be short and would not typically occur on a frequent basis. Maintaining the ROW would ensure the continued availability of low-growing open habitats for foraging and nesting for open-habitat species.

North Alternative Route Options

Long Valley Road Option

The Long Valley Road Option would result in the removal of less sagebrush-dominated habitat and more cultivated habitat. As such, the Long Valley Road Option would impact less habitat for wildlife species that use sagebrush-dominated habitat, such as Columbian sharp-tailed and greater sage grouse than the portion of line it would replace. Since cultivated land does not provide native habitat to wildlife, this routing option would have slightly less impact on wildlife than the North Alternative route (impact would be ***low*** to ***none***). Impacts from incidental mortality, avian collisions, and noise disturbance would be similar to those described above.

North Highland Option

The North Highland Option would result in the removal of less sagebrush and grass-dominated habitat and more conifer and aspen-dominated habitat. This route option would therefore impact less habitat for wildlife species that use sagebrush and grass-dominated habitat, such as the Columbian sharp-tailed and greater sage grouse, than the portion of line it would replace. However, The North Highland Option would instead impact more habitat for wildlife species that use conifer and aspen-dominated habitat, such as the northern goshawk and boreal owl (impacts would be ***low***). Impacts from incidental mortality, avian collisions, and noise disturbance would be similar to those described for the North Alternative.

3.7.3 Environmental Consequences of the South Alternative

As with the North Alternative, the greatest source of potential impacts on wildlife from the South Alternative would be short- and long-term habitat modification associated with habitat clearing for project construction. Additional impacts would be the same as the North Alternative, and would include short-term disturbance from noise and human activity during construction; incidental mortality during construction; increased risk of avian collisions with transmission line conductors, overhead ground wires (shield), and guy wires; and increased human access due to access road creation and improvement.

Wildlife Habitat Impacts

The majority of the South Alternative ROW would traverse grassland and sagebrush-dominated habitat with no tall-growing vegetation, and most low-growing vegetation in these areas would not be removed. However, as with the North Alternative, trees and tall-growing woody vegetation along the South Alternative would be cleared within the transmission line ROW to prevent an electric arc or interference from the proximity of vegetation to the conductors. Approximately 8.9 acres of wildlife habitat associated with aspen-dominated forest and 53.7 acres of habitat associated with conifer-dominated forest would be cleared during construction. The majority of the tree removal would occur on the C-TNF along the South Alternative, though some would also occur on BLM, state-owned and private parcels. Although acres of impact would be relatively low compared to overall available habitat acreage in the project area, the impact on wildlife habitat where the corridor of the South Alternative crosses would be ***moderate*** to ***high***. Approximately 2.6 acres of aspen-dominated forest and 11 acres of conifer-dominated forest would be permanently lost due to construction of new permanent access roads and structure footings. Similar to the North Alternative, the remaining 6.3 acres of aspen-dominated forest and 42.6 acres of conifer-dominated forest would be converted from forested habitats to low-growing emergent and mountain shrub vegetation in the South Alternative ROW.

Permanent tree removal for the South Alternative corridor would result in habitat fragmentation and edge effects that can cause changes in the vegetation composition, increase potential for the spread of noxious weeds, and increase susceptibility to blowdown for trees located at the edge of a cut. Habitat fragmentation would reduce habitat suitability for some species, reduce the ability for small and/or less mobile species to disperse, and could isolate some populations. The impact from habitat fragmentation to wildlife species would be ***moderate***.

Reduction of habitat suitability for species which require old and mature forest habitat conditions from edge effects would be similar to the North Alternative. The South Alternative would convert a small amount of forest to non-forested vegetation relative to the amount of forested land within the project area. The effect of increasing habitat edges and fragmenting habitat would therefore be limited. As with the North Alternative, conversion of forested habitat to low-growing vegetation along portions of the South Alternative could provide increased foraging area for big game animals, but would also provide reduced cover for these species. Raptors would likely have increased foraging area in such converted habitat. Additional surveys of the South Alternative will be conducted in spring/summer 2013 to further assess the presence of old growth forest characteristics along this corridor.

Tree and snag removal would reduce potential nesting trees for cavity nesting birds. Removal of live trees within the South Alternative ROW and access roads would also reduce the overall number of trees that could become snags in the future, a ***low*** to ***moderate*** long-term impact on cavity nesting birds.

The South Alternative would have the same short-term, ***low*** impacts as the North Alternative within non-forested wildlife habitats because crushed or cleared vegetation would be expected to grow back within two growing seasons. The South Alternative's long-term impacts on wildlife habitat associated with non-forested vegetation communities would be the same as those of the North Alternative (***low***) because only approximately 79.4 acres of habitat would be permanently lost due to vegetation removal from structures and permanent access roads. As with the North alternative, non-forested wildlife habitat types are abundant within the project area.

Construction Noise Impacts

As with the North Alternative, human activity and noise levels would be elevated during the day while construction occurs within the corridor of the South Alternative, but would decrease to ambient levels within a half mile of routine construction activities. Impacts on wildlife from noise would be similar to the North Alternative, and would include temporary displacement, interference with hearing mating and alarm calls, and disruption of foraging and breeding. Were the disruption to occur during a critical time, such as the breeding season, reproductive success could be reduced. For this reason, temporary construction-related noise impacts would be expected to have a short-term, ***moderate*** impact on wildlife species.

Incidental Mortality and Disturbance

Operation of heavy equipment and vegetation removal activities in the South Alternative corridor could result in the same incidental mortality rates of less mobile species of wildlife as the North Alternative. Similar to the North Alternative, construction timing restrictions would be implemented as described in Section 3.7.4 to avoid the potential for incidental mortality of nesting migratory birds. With implementation of mitigation measure, the impacts would be ***low*** and short term.

Potential indirect road-related impacts on wildlife from the South Alternative would be the same as those described for the North Alternative, and could result in wildlife mortality, or habitat modification or loss. There is also the same potential as the North Alternative for an increase in vehicle collisions wildlife from construction-related traffic on existing roads, and from vehicle traffic on new permanent access roads. New and improved access roads along the transmission line would improve public access within the corridor of the South Alternative, and could result in more human use of lands in the immediate vicinity. The increased presence of OHVs using new permanent access roads could result in similar impacts on wildlife and habitat as those described for the North Alternative. All permanent access roads on USFS, BLM, and BIA lands would be gated and closed to public use; therefore, the indirect impact of access roads associated with the South Alternative would be ***low***.

Avian Disturbance and Collisions

High voltage transmission lines, transmission structures, overhead ground wire, and guy wires for the South Alternative would pose the similar electrocution and collision risk to birds as the North Alternative, though the South Alternative would only have one overhead ground wire. It is likely that, collision impacts on migratory birds from the South Alternative would be similar to the North Alternative, though slightly less as it is not adjacent to the National Wildlife Refuge or wet meadow complexes that are frequented by swans and cranes. Therefore it is expected that impacts could be long term and ***moderate***.

Although potential avian collision impacts are moderate, collision risk for the South Alternative would be minimized using the same methods as the North Alternative: through the installation of visibility enhancement devices in the areas of highest collision risk. The results of the avian model and expert opinion would be used to determine the best locations to install markers. The installation of bird flight diverters on overhead ground wires in areas determined to represent the highest risk of avian interactions would reduce the potential for collisions and the overall risk of avian collisions to a ***low*** level.

Big Game Habitat

All habitat types identified within the corridor of the South Alternative represent suitable habitat for elk and mule deer during seasonal migrations. C-TNF lands contain suitable winter range habitat for mule deer, elk, and moose. Sagebrush and grass-dominated habitat on state, BLM, and BIA lands provide suitable wintering habitat for mule deer. Wetland and riparian habitats provide water sources and forage during dry summer months.

Construction of the South Alternative would result in long-term impacts on C-TNF designated non-critical big game winter range habitat that intersects the project corridor. Short-term impacts would be limited to temporary vegetation removal or disturbance in non-forested habitats, and would quickly recover. Long-term impacts would result from access road construction and forest clearing within the transmission line and access road ROWs. These disturbances would further fragment the forested habitat within the project area and could affect movements of big game animals within the corridor of the South Alternative. The movement of individual big game animals is most likely to be hindered, if at all, during periods of high snowfall. Corridors of undisturbed habitat within the vicinity of the corridor of the South Alternative would remain as routes for individual big game animals to circumvent project disturbances, but such diversions, if longer than preferred routes in winter, may stress the energy reserves of some individuals. While some individual game animals could be affected, this likely would not result in any measurable impact on any big game species population; the impact on game animals associated with the construction of the South Alternative would be ***low***.

Special-status Wildlife Species

Appendix G describes the specific impact and level of impact for all species known or expected to occur in the project area potentially impacted by the South Alternative. Appendix G includes federally listed and candidate species, USFS MIS, and BLM and state sensitive species. Table 3-19 summarizes the South Alternative's potential level of impacts on special status wildlife species. Described below are the ESA-listed or ESA candidate species and BGEPA species that the Project could impact.

Greater sage grouse—Construction of the South Alternative would result in short-term impacts on 15.8 acres of sagebrush habitat and approximately 24.9 acres of long-term impacts on sagebrush habitat. Although long-term impacts would reduce the amount of available sagebrush habitat for Greater sage grouse, sufficient amounts of suitable sagebrush habitat would remain functional at both the local and range-wide scales to maintain the viability of this species. As with the North Alternative, temporarily elevated construction noise and human activity could cause temporary displacement, which could increase predation as individuals seek alternative habitat. While some individual birds may be impacted, the impact on the species would be ***low*** from the South Alternative.

Columbian sharp-tailed grouse—Construction of the South Alternative would result in short-term impacts on 27.6 acres of grassland, 0.4 acre of mountain-shrub, 1.2 acres of aspen, and 0.1 acre of wetland habitat of which some would be riparian. The South Alternative would result in permanent impacts on 0.4 acre of mountain-shrub, 40.3 acres of grassland, 8.9 acres of aspen, and no acres of wetland habitat. Although these long-term impacts would reduce the amount of available habitat for the sharp-tailed grouse, sufficient amounts of suitable habitat would remain functional at both the local and range-wide scales to maintain the viability of this species. As with the North Alternative, temporary displacement of grouse from noise and human presence during construction could temporarily increase predation as they seek out alternative suitable habitat. While some individual birds may be impacted, the impact on the species would be ***low*** from the South Alternative.

Wolverine—Suitable foraging habitat exists within the corridor for the South Alternative. Although project construction and operation would reduce suitability for wolverine foraging, sufficient habitat would remain functional at both the local and range-wide scales, resulting in ***low*** project-related impacts.

Bald eagle—The bald eagle has been documented in the general area of the corridor for the South Alternative. Noise during project construction could disturb or displace nesting or roosting bald eagles temporarily, but no nests have been documented within 1 mile of the corridor for the South Alternative. A nest was documented on private lands north of Soda Springs, about 1.5 miles southeast of the southern end of the South Alternative. The nest would be within Zone III under the Bald Eagle Management Plan for the Greater Yellowstone Area (Greater Yellowstone Bald Eagle Working Team, 1983). Zone III includes all potential foraging habitat within a 2.5 mile radius of the nest and calls for all utility lines in this zone to be limited and restricted to locations where the potential for eagle collisions and electrocutions is minimal. The primary focus of this management zone is to maintain adequate foraging conditions and aid in maintaining the integrity of Zones I and II. As discussed above, the South Alternative would not pose an electrocution risk to bald eagles, bisect a nest from any prime foraging habitat, or cross any prime foraging habitat. The avian collision risk model discussed above found the area within 2.5 miles of the bald eagle nest to have relatively low collision risk.

Similar to the North Alternative, foraging habitat would not be directly impacted by forest clearing, and incidental mortality is would be unlikely since most bald eagles would avoid the construction area. Forested vegetation could remove potentially suitable nesting or perching trees, but would not directly impact foraging habitat. Even though some potential bald eagle habitat may be impacted through forest clearing, sufficient habitat would remain functional at both the local and range-wide scales to maintain the viability of the species. Therefore, impacts from the South Alternative on bald eagles would be ***low***.

Operation and maintenance activities under the South Alternative would be the same as the North Alternative. Since routine maintenance could result in temporary displacement of wildlife, project operation and maintenance would have a ***low*** impact on wildlife.

South Alternative Route Options

Option 1

Option 1 could impact slightly more wildlife habitat than the South Alternative, because the option would cross approximately 8.2 additional acres of habitat. Impacts on aspen and mountain shrub habitat would be the same as the South Alternative. Impacts on sagebrush and conifer-dominated habitat would be less under Option 1 (25 fewer acres of sagebrush and 4 fewer acres of conifer than the South Alternative). The changes in the crossing of the Blackfoot River would result in impacts similar to the South Alternative. Overall, impacts from incidental mortality, avian collisions, and disturbance and displacement from construction noise and human activity would be similar to those described for the South Alternative.

Option 2

Option 2 could impact slightly less wildlife habitat than the South Alternative, because the option would cross approximately 2.1 fewer acres of habitat. Impacts on aspen and mountain shrub-dominated habitat would be the same as the South Alternative. Impacts on sagebrush-dominated habitat would be slightly less under this routing option, while impacts on grass-dominated habitat would be more than the South Alternative. The changes in the crossing of the Blackfoot River would result in impacts similar to the South Alternative. Overall, impacts from incidental mortality, avian collisions, and disturbance and displacement from construction noise and human activity would be similar to those described for the South Alternative.

Option 3

Option 3 could impact slightly more wildlife habitat than the South Alternative, because the option would cross approximately 22.0 additional acres. More basalt outcrops with native vegetation would be crossed which could affect some species of wildlife, but no priority species are known to occur in these areas. Option 3 has fewer impacts than the South Alternative to sagebrush-dominated habitat because it travels north from the proposed substation through agricultural lands and avoids several sagebrush areas. In addition, about 19 fewer acres of aspen-dominated habitat and 7 fewer acres of conifer-dominated habitat would be impacted under Option 3 (along the base of treed slopes at the entrance of the C-TNF). The changes in the crossing of the Blackfoot River would result in impacts similar to the South Alternative. Overall, from incidental mortality, avian collisions, and disturbance and displacement from construction noise and human activity would be similar to those described for the South Alternative.

<u>Option 4</u>

Option 4 could impact slightly more wildlife habitat than the South Alternative, because the option would cross approximately 10.7 additional acres. More basalt outcrops with native vegetation would be crossed which could affect some species of wildlife, but no priority species are known to occur in these areas. Similar to Option 3, Option 4 has fewer impacts than the South Alternative to sagebrush-dominated habitat because it travels north from the proposed substation through agricultural lands and avoids several sagebrush areas. The changes in the crossing of the Blackfoot River would result in impacts similar to the South Alternative. Overall, from incidental mortality, avian collisions, and disturbance and displacement from construction noise and human activity would be similar to those described for the South Alternative.

3.7.4 Mitigation

The following mitigation measures have been identified to reduce or eliminate wildlife impacts from the Project.

- Consult with the appropriate state or federal land management agency (C-TNF, BLM, or IDFG) concerning special status species that have already been identified or that may be identified during follow up surveys, and implement any mitigation measures (such as feasible and appropriate avoidance measures) identified as a result of these consultations.
- Minimize ground-disturbing activities, particularly in sensitive habitats.
- Install visibility enhancement devices on the overhead ground wires to reduce the risk of collision in areas that have been determined by the avian risk model to bear a high risk of increased avian collisions.
- Conduct nesting bird pre-construction surveys prior to tree removal.
- Conduct pre-construction monitoring for sage and Columbian sharp-tailed grouse leks in sage brush habitats.
- Prohibit construction activity within 10 miles of an active greater sage grouse lek and within 2 miles of active Columbian sharp-tailed grouse leks between the end of March and the beginning of May, when possible.
- Avoid manipulating or altering sagebrush stands with tall, relatively thick sagebrush that are suitable as grouse nesting habitat during the nesting period (May to June).
- Consult with the C-TNF regarding construction and access within big game winter range habitat between November 15 and April 15. Within big game winter ranges, seed disturbed areas with preferred big game forage species, as recommended by the C-TNF.
- Identify wetlands and other sensitive areas prior to initiating construction so that construction workers avoid unintentional impacts on wildlife habitat.

- Minimize the amount of permanent access roads necessary for the Project to minimize the potential for wildlife collisions.
- Limit ground-disturbing activities to structure sites, access roads, staging areas, and the proposed substation site (see Section 3.1.4, Land Use).
- Restrict public access to permanent access roads (see Section 3.1.4, Land Use).
- Leave undisturbed plants less than 4 feet in height undisturbed within the 100-foot-wide ROW where it would not interfere with the safe operation of the transmission line (see Section 3.3.4, Visual Resources).
- Use appropriate seed mixes, application rates, methods, and timing to revegetate disturbed areas (see Section 3.4.4, Vegetation).
- Use BMPs to limit erosion and the spread of noxious weeds (see Section 3.4.4, Vegetation).
- Save topsoil removed for structure and temporary spur road construction and use on-site for restoration activities where possible (see Section 3.4.4, Vegetation).
- Apply herbicides according to the BPA Transmission System Vegetation Management Program EIS (DOE/EIS-0285) and label recommendations (see Section 3.4.4, Vegetation).
- Avoid snag and large tree removal to the extent possible (see Section 3.4.4, Vegetation).
- Decommission temporary roads according to the requirements and BMPs of the appropriate land management agency (see Section 3.4.4, Vegetation).
- Limit road improvements to the minimum amount necessary (see Section 3.11.4, Transportation).
- Ensure that all equipment has standard sound-control devices (see Section 3.12.4, Noise).
- Conduct noise-generating construction activities only during normal daytime hours, i.e., between 7:00 a.m. and 7:00 p.m. to the extent possible (see Section 3.12.4, Noise).
- Initiate discussions with local fire districts and work with the districts and other appropriate entities to develop fire and emergency response plans (see Section 3.13.4, Public Health and Safety).

3.7.5 Unavoidable Impacts Remaining after Mitigation

Unavoidable wildlife impacts would include short-term wildlife disturbance and mortality as a result of construction-related activities. In addition, long-term impacts could include additional disturbances during maintenance actions, potential avian collisions with the transmission lines, and the long-term loss of forested habitat, where the ROW would be maintained with only low-growing vegetation. Overall, the Project is not expected to have unavoidable impacts on the population viability of any species, because no unique habitat would be lost or converted and species would have plentiful appropriate habitat remaining in the project area.

3.7.6 No Action Alternative

Under the No Action Alternative, the Project would not be built, so the impacts on wildlife related to the construction, operation, and maintenance of the transmission lines would not occur.

3.8 Fish

3.8.1 Affected Environment

Perennial Streams

Aquatic resources and habitat within the project area are limited to four fish bearing streams: the Blackfoot River, Little Blackfoot River, Meadow Creek, and Gravel Creek. For more information on project area streams, see Section 3.6, Water Resources, Floodplains, and Wetlands. Table 3-20 summarizes the native and non-native fishes known to occur in the four perennial streams.

Table 3-20. Native and Non-Native Fishes in Perennial Streams identified in the Project Area

Perennial Stream	Native Species	Non-Native Species
Blackfoot River	Mountain whitefish, Yellowstone cutthroat trout, Utah chub, longnose dace, speckled dace, redside shiner, Utah sucker, mountain sucker, Paiute sculpin, and mottled sculpin	Rainbow trout, brook trout, common carp, and yellow perch
Little Blackfoot River	Longnose dace, speckled dace, redside shiner	Rainbow trout, smallmouth bass, largemouth bass
Meadow Creek	Longnose dace, speckled dace, redside shiner	None
Gravel Creek	None	Brook trout

Source: IDFG 2011b, 2011c; C-TNF 2002b

Blackfoot River

The reach of the Blackfoot River in the corridor of the North Alternative (line mile 10) is slow-moving glide habitat and not high-quality spawning or rearing habitat for Yellowstone cutthroat trout (*Onchorhynchus clarki bouvieri*), the species of primary management interest in the river because of the high turbidity, excess depth (greater than 1.0 foot for spawning), lack of instream structure and cover (for rearing), and unsuitable substrate (based on substrate that was visible). The reach, however, does serve as a migratory corridor for Yellowstone cutthroat traveling from Blackfoot Reservoir to access upstream spawning habitat outside of the project area. The South Alternative crosses the Blackfoot River between line miles 10 and 11 and again at line mile 19, and closely parallels it between line mile 11 and the connection with the existing LVE transmission line at line mile 22. Habitat where the South Alternative crosses the Blackfoot River is similar to habitat crossed by the North Alternative (primarily a migratory corridor). No spawning habitat exists at the line mile 10 crossing, and the likelihood that spawning habitat exists at the Narrows in line mile 19 is low (Mende 2012, personal communication).

According to the Idaho fishing regulations, the Blackfoot River upstream of Blackfoot Reservoir is closed to fishing from December 1 through June 30. The river is open to trout fishing from July 1 to November 30, but no harvest of cutthroat trout is allowed.

Little Blackfoot River

The Little Blackfoot River is located between the Blackfoot River and Meadow Creek and shares similar native and non-native fish species (Table 3-20). The North Alternative corridor crosses the Little Blackfoot River between line miles 16 and 17. The South Alternative does not cross this river. Similar to the Blackfoot River, the Little Blackfoot River also does not provide high-quality spawning or rearing habitat for Yellowstone cutthroat trout in the corridor of the North Alternative (line mile 17). Similar to the Blackfoot River, fish also likely use the river as a migratory corridor to upstream spawning areas. In addition, the river is also open for trout fishing, but no harvest of cutthroat is allowed.

Meadow Creek

Meadow Creek is a tributary to the Blackfoot Reservoir that originates west of Grays Lake National Wildlife Refuge. The corridor for the North Alternative crosses Meadow Creek where a bridge provides access across Meadow Creek. The Meadow Creek Bridge is located on BIA land, upstream of the North Reservoir Road Bridge (line mile 18). There is no riparian vegetation at the Meadow Creek crossing and this reach is not high-quality spawning or rearing habitat for Yellowstone cutthroat trout or other salmonids, because of the excess depth, limited instream structure and cover, and low-suitability substrate. Meadow Creek is not considered a stream of management interest by IDFG. Primary species reported in the creek include minnows and dace. The South Alternative does not cross Meadow Creek.

Gravel Creek

Gravel Creek is a low-gradient, meandering channel where the corridor for the North Alternative crosses line mile 26. The riparian overstory is willow and the understory appears to be primarily irrigated pasture. Based on site observations, the substrate ranges from silt to gravel. A portion of the Gravel Creek flow is diverted to an irrigation ditch (which crosses the existing Gravel Creek Road/Forest Road 191) on private land. The South Alternative does not cross Meadow Creek.

In 2002, the fish collected in Gravel Creek were all non-native brook trout (USFS 2002), although all tributaries to Grays Lake and Willow Creek (which includes Gravel Creek) have coldwater management objectives to restore native cutthroat trout.

Fish Species

Common Fish Species

Native fish species found within the project area include mountain whitefish (*Prosopium williamsoni*), Yellowstone cutthroat trout, Utah chub (*Gila atraria*), longnose dace (*Rhinichthys* *cataractae*), speckled dace (*Rhinichthys osculus*), redside shiner (*Richardsonius balteatus*), Utah sucker (*Catostomus ardens*), mountain sucker (*Catostomus platyrhynchus*), Paiute sculpin (*Cottus beldingii*), and mottled sculpin (*Cottus bairdi*). Non-native fish species include rainbow trout, brook trout (*Salvelinus fontinalis*), common carp (*Cyprinus carpio*), and yellow perch (IDFG 2011f, 2011g; C-TNF 2002b) (see Table 3-20).

Special Status Fish Species

There are no ESA listed or candidate fish, or USFS MIS fish in the alternative corridors. There are two species of special concern in the project area: Yellowstone cutthroat trout and northern leatherside chub (*Lepidomeda copei*), as described further below.

- Yellowstone cutthroat trout is a USFS Region 4 sensitive species, and a BLM and IDFG Type 2 species (IDFG 2011g). Yellowstone cutthroat trout is a subspecies of cutthroat trout and historically occurred in the Yellowstone River drainage in Montana and Wyoming and in the Snake River drainage in Wyoming, Idaho, Utah, Nevada, and probably Washington. Anthropogenic activities have resulted in substantial reductions in the historical distribution of this subspecies, and many unique local populations have been extirpated. Similar to other salmonids, the species requires clear, cold rivers and lakes with good water quality, with optimal water temperatures ranging from 4 to 15 degrees Celsius (°C), although may tolerate temperatures up to 27°C.
- Northern leatherside chub is also a USFS Region 4 sensitive species, a BLM Type 3 imperiled species and an IDFG imperiled (S2) non-game species and may occur in southeastern Idaho (IDFG 2005; Nico and Fuller 2012), but has not been documented in the North or South alternative corridors. The historic range of the northern leatherside chub included headwater tributaries of the Bonneville Basin in Utah, Idaho, and Wyoming, and the headwaters of the Snake River Basin in Idaho. Recent data indicate that the species still occurs in the upper Salt River tributaries. The species occurs primarily in high-altitude streams (4,100 to 9,000 feet in elevation) with an optimal water temperature range of 15 to 20°C, and optimal habitat with relatively slow water velocities (less than 2 feet per second), intermediate water depths (1 to 3 feet), and a substrate of course fines. The species is believed to be in decline, although limited information is available.

Alternative Route Options

North Alternative Route Options

The Long Valley Road Option crosses the Little Blackfoot River about 830 feet upstream of the North Alternative crossing location. Similar fish and aquatic habitat are present.

The North Highland Option does not cross aquatic resources or fish habitat.

South Alternative Route Options

Option 1 crosses the Blackfoot River approximately 1,200 feet upstream of the South Alternative crossing at the Narrows. All remaining Option 1 stream crossing locations are the same as the South Alternative. Similar aquatic resources and fish habitat are present.

Option 2 crosses the Blackfoot River approximately 1,400 feet upstream of the South Alternative crossing of the Narrows. All remaining Option 2 stream crossing locations are the same as the South Alternative. Similar aquatic resources and fish habitat are present.

Option 3 crosses two tributaries of the Blackfoot River near Highway 34 and crosses the Blackfoot River downstream of the South Alternative's first crossing of the Blackfoot River. Option 3 also avoids the first four crossings of tributaries of the Blackfoot River by the South Alternative; shares some crossings of a Blackfoot River tributary with the South Alternative, and crosses within a 0.25 mile of each of the remaining South Alternative stream crossings. Similar aquatic resources and fish habitat are present.

Option 4 crosses a wetland complex and open water bodies associated with Woodall Springs, which contain habitat for fish and other aquatic wildlife. All remaining Option 4 stream crossing locations are the same as the South Alternative, with similar aquatic resources and fish habitat.

3.8.2 Environmental Consequences of the North Alternative

Construction of the North Alternative could impact fish and their habitat from the introduction of sediment into waterbodies through soil erosion and transport. Construction activities, including vegetation clearing in the proposed ROW, access road construction and improvement, and bridge removal and installation would remove vegetation allowing sedimentation and water temperatures to increase. Riparian vegetation, water temperature, and instream sediment influence fish spawning incubation success, rearing habitat quantity and quality, and macro invertebrate production (Bjornn et al. 1998; Bjornn and Reiser 1991). Loss of channel stability and riparian vegetation results in increased bank erosion and sediment delivery, shallower depth, decreased cover, and increased water temperature. During construction, stormwater and sedimentation, along with other potential contaminants, would be controlled by implementation of the SWPPP (see Section 3.5 Geology and Soils).

Blackfoot River

The North Alternative would cross the Blackfoot River in one location where there is a population of Yellowstone cutthroat trout. Since riparian vegetation in the corridor of the North Alternative crossing is willow, clearing would not be required for the transmission line ROW. Additionally because no road work would occur at this crossing, there would be ***no*** impact on fish or fish habitat in the Blackfoot River.

Little Blackfoot River

The North Alternative would cross the Little Blackfoot River in one location. Similar to the Blackfoot River crossing, because vegetation clearing and instream work are not required, there would be ***no*** impact on fish or fish habitat in the Little Blackfoot River.

Meadow Creek

The North Alternative would cross Meadow Creek at two locations, one for the proposed transmission line and one for an access road. ***No*** impact would occur to fish or fish habitat where the transmission line crosses Meadow Creek because no construction activities would occur in this area. An existing bridge that crosses Meadow Creek that provides access to the transmission would be replaced. Replacement would result in soil disturbance with possible temporary increases in sediment and turbidity in Meadow Creek. However, these impacts would be short term and ***low*** due to the short duration of the activity. Additionally, implementation of mitigation as described in Section 3.8.4 would further reduce impacts on fish and habitat. In the long term, the bridge replacement would be beneficial to fish and their habitat because it would reduce bank erosion caused by channel constriction at the existing bridge, and would reduce the potential for failure of the existing bridge.

Approximately 0.4 acre of native surface road would be improved in the riparian area, on either side of the Meadow Creek Bridge. Road improvement has the potential to release sediment into Meadow Creek resulting in a short-term, small contribution of sediment to the creek. This minor addition of sediment would not likely change the diversity or abundance of local fish species or interfere with key behaviors. Implementation of BMPs described in Section 3.8.4, Mitigation, also would reduce sediment movement from the road improvement site. Similar to impacts from bridge replacement, impacts would be short term and ***low***. After improvement, the road could continue to be a long-term source of sediment delivery to Meadow Creek. However, revegetation of the road margins would provide a filter for runoff.

Gravel Creek

The North Alternative would cross Gravel Creek in one location. Similar to the Blackfoot River and Little Blackfoot crossings, because vegetation clearing is not required, there would be ***no*** impact on fish or fish habitat in Gravel Creek.

Impacts on fish and fish habitat from operation and maintenance activities could result from increased temporary turbidity from soil disturbance associated with road maintenance or ROW vegetation control. Due to the limited quantity of project facilities that would be placed near fish-bearing perennial streams, impacts would be short term and ***low***.

North Alternative Route Options

Long Valley Road Option

The Long Valley Road Option would result in similar impacts on fish and fish habitat as those described for the North Alternative’s crossing of the Little Blackfoot River (***low***).

North Highland Option

The North Highland Option would not cross aquatic resources or fish habitat. Therefore, the North Highland Option would have ***no*** impact on fish or fish habitat.

3.8.3 Environmental Consequences of the South Alternative

As with the North Alternative, construction of the South Alternative could impact fish and their habitat from the introduction of sediment into waterbodies through soil erosion and transport. Construction activities which would remove vegetation would cause sedimentation and water temperatures to increase. Similar to the North Alternative, stormwater and sedimentation, along with other potential contaminants, would be controlled by implementation of the SWPPP during construction (see Section 3.5, Geology and Soils).

Blackfoot River

The South Alternative would span the Blackfoot River in two locations and span 14 minor tributaries of the Blackfoot River. No work needed to construct, operate, or maintain the proposed transmission line would occur within actively flowing channels. The construction of new access roads and new transmission structures has the potential to temporarily increase sediment loading and temperature in the Blackfoot River and its tributaries. Removal of vegetation from riparian corridors, coupled with sediment delivery from ditches and road surfaces during construction activities, could affect aquatic resources and fish habitat. Sediment traps, water barring, and other proven BMPs would be implemented to prevent the flow of loose sediment into the streams and water bodies (see Section 3.8.4, Mitigation). Due to the short duration of construction activities and the use of BMPs, impacts on fish and fish habitat are expected to be short term and ***low***.

South Alternative Route Options

<u>Options 1 through 3</u>

Options 1, 2, and 3 would result in the same short-term, ***low*** impacts on fish and fish habitat as those described for the South Alternative's crossing of the Blackfoot River and its tributaries.

<u>Option 4</u>

Construction of Option 4 through the wetland complex and open water bodies associated with Woodall Springs would cause impacts on fish and fish habitat. Construction of temporary access roads, transmission structures, and construction vehicle use would increase sediment loading, turbidity, and temperature in fish-bearing streams and water bodies. Short-term impacts during construction would be ***moderate*** to ***high*** with the use of erosion control measures, appropriate time for in-water work, and other proven BMPs. Long-term impacts from the removal of fish habitat, and operation and maintenance of the line, would be ***moderate***.

3.8.4 Mitigation

The following mitigation measures have been identified to reduce or eliminate fish and aquatic habitat impacts from the Project.

- Install the bridge in Meadow Creek during the appropriate in-water work window.
- Design and construct culverts or bridges for access roads in a manner that allows fish passage.

- Use BMPs to limit erosion and the spread of noxious weeds (see Section 3.4.4, Vegetation).
- Apply herbicides according to the BPA Transmission System Vegetation Management Program EIS (DOE/EIS-0285) and label recommendations (see Section 3.4.4, Vegetation).
- Retain existing low-growing vegetation where possible (see Section 3.4.4, Vegetation).
- Leave erosion and sediment control devices in place until all disturbed sites are revegetated and erosion potential has returned to pre-project conditions (see Section 3.4.4, Vegetation).
- Decommission temporary roads according to the requirements and BMPs of the appropriate land management agency (see Section 3.4.4, Vegetation).
- Develop and implement erosion and sediment control plans (see Section 3.5.4, Geology and Soils).
- Design temporary and permanent access roads to control runoff and prevent erosion (see Section 3.5.4, Geology and Soils).
- Install sediment barriers and other suitable erosion and runoff control devices (see Section 3.5.4, Geology and Soils).
- Surface all permanent access roads with rock (see Section 3.5.4, Geology and Soils).
- Maintain erosion controls near waterbodies (see Section 3.6.4, Water Resources, Floodplains, and Wetlands).
- Minimize the number of access road stream crossings (see Section 3.6.4, Water Resources, Floodplains, and Wetlands).
- Minimize the project ground disturbance footprint; particularly in sensitive areas (see Section 3.6.4, Water Resources, Floodplains, and Wetlands).
- Cease project construction near stream courses under high flow conditions (see Section 3.6.4, Water Resources, Floodplains, and Wetlands).
- Locate refueling and servicing operations outside of AIZs. Use pumps, funnels, absorbent pads, and drip pans when fueling or servicing vehicles (see Section 3.6.4, Water Resources, Floodplains, and Wetlands).
- Consult with the appropriate state or federal land management agency (USFS, BLM, or IDFG) concerning any special status species (see Section 3.7.4, Wildlife).
- Limit road improvements to the minimum amount necessary (see Section 3.11.4, Transportation).
- Prepare and implement Spill Prevention and Response Procedures (see Section 3.13.4, Public Health and Safety).

3.8.5 Unavoidable Impacts Remaining after Mitigation

Unavoidable impacts on fish and their habitat from sedimentation or turbidity during construction of the South and North alternatives and options (except Option 4 for the North Alternative) would be limited because soil disturbance would be short term. Long-term impacts from Option 4 for the North Alternative could include disturbance or removal of fish habitat.

3.8.6 No Action Alternative

Under the No Action Alternative, the Project would not be built, so the impacts on fish and fish habitat related to the construction, operation, and maintenance of the transmission lines would not occur.

3.9 Cultural Resources

Cultural resources are defined as evidence of human occupation or activity related to history, anthropology, architecture, and engineering. The term “historic property” includes a subset of cultural resources defined in the National Historic Preservation Act (NHPA) as: “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion on the National Register”; this term includes artifacts, records, and remains that are related to such district, site, building, structure, or object (16 U.S.C. Section 470[w][5]). Historic properties include prehistoric resources that pre-date European settlement.

3.9.1 Affected Environment

Southeastern Idaho has been populated by various cultural groups for at least the past 12,500 years. Historical data demonstrate continuous use of the area surrounding the project area from the time of the first Euro-American exploration through the present (Ahlman and Falkner 2011; CH2M Hill 2009).

Human occupation in southeastern Idaho can be broken down into four geographically and temporally designated periods (Ahlman and Falkner 2011; CH2M Hill 2009):

- **Paleoindian Period (12,500-8,000 Before Present [B.P.])—**Human groups present in the region during the Paleoindian Period, beginning about 12,500 B.P., included big game hunters referred to as Clovis and Folsom cultures. Their nomadic lifestyle followed the migratory patterns of bison, mammoth and elk, upon which they relied for food. These nomadic hunters are generally identified through their artifacts, which include the Clovis style spear point. The variety of early projectile point styles at sites in and around the Snake River in southeast Idaho suggests multiple occupations during the Paleoindian Period. Numerous Paleoindian points have been recovered from the Market Lake area located approximately 50 miles northwest of the project area. Paleoindian period artifacts are largely confined to undated surface sites on and near the Snake River Plain.
- **Archaic Period (8,000-1,200 B.P.)—**Due to changing environmental conditions, such as climate and resource availability, large game populations began to decline about 8,000 years ago. During this period, referred to as the Archaic Period, food supplies shifted from large game animals to an increased reliance on fish, mussels, and smaller game, in addition to the gathering of plant resources such as camas, bitterroot, and other natural crops and seeds. Increasing reliance on the gathering of floral resources changed the tool types associated with the people of this period.

  In the Great Basin, the Archaic Period was characterized by a shift from a highly mobile hunter-forager lifestyle to more sedentary living patterns, or at least multiple seasonal occupations of camps or villages, at about 3,800 B.P. Archaic sites exist in the uplands and canyons in what are now parts of the Caribou and Blackfoot ranges. In particular, numerous archaic sites have been recorded in the canyons and arroyos carved by Willow Creek and other drainages near the project area.
- **Late Prehistoric Period (1,300-200 B.P.)—**The late prehistoric period is distinguished by technological advances including pottery and the bow and arrow. The use of the Snake

River terraces and nearby uplands by late prehistoric groups appears to be tied to both fishing and seasonal encampments. While numerous cultural groups traveled through or utilized the resources of the Snake River Plain, the Bannock and Shoshone were the principal inhabitants of eastern Idaho during the Late Prehistoric period. Near the project area, excavated sites that contain late Shoshonean components were recorded in 1958 and 1966. These sites include several rock shelters located in Willow Creek Canyon, north and east of the area near the confluence of Willow and Meadow creeks.

- **Historic Period (1800 to present)—**Southeastern Idaho was opportunistically used by trappers and exploration parties in the early 1800s. In 1806, Lewis and Clark's journals became the first documents describing the inhabitants of the upper Great Basin. By the mid-1840s, emigrants, and, later, gold miners, were passing through the region, most on their way to Oregon and California. Miners were soon followed by small farms and nearby support communities. By the early 1860s, the first settlements were developing in southeastern Idaho. Many settlers were attracted to the general area because of mining opportunities in nearby Montana and Wyoming. Settlers continued to move into the area and the western foothills of the Blackfoot Mountains through the 1880s. Mining and agriculture remained active enterprises in southeastern Idaho to the present time, and much of the region is still tied to agriculture, livestock, and mining enterprises.

North Alternative Archival Research and Cultural Resource Survey

An archival search through the Idaho SHPO records identified 12 previous cultural resource studies conducted since 1990 within a buffer area of 1 mile to either side of the North Alternative corridor, which included the proposed access roads. In addition, the archival search identified 13 cultural resource sites within a 1-mile area surrounding the project corridor. These sites include two historic roads, one historic pond, a historic trash scatter, and nine prehistoric lithic scatters. The lithic scatters are primarily concentrated near the Blackfoot Reservoir.

All of the prehistoric lithic scatter sites were recorded in the late-1960s and early 1970s, and none have National Register of Historic Places (NRHP) recommendation information. Seven of the prehistoric sites are greater than 500 feet from the North Alternative corridor. Two sites in the vicinity of the town of Henry are mapped within 213 and 82 feet, respectively, of a proposed access road.

One previously recorded archaeological site exists within the North Alternative corridor. This site is the Lander Road, an emigrant-era trail that was the first emigrant trail segment funded, mapped, and constructed by the U.S. Government. The Lander Road is part of the Oregon and California National Historic Trails, and portions of it are listed in the NRHP. The route of the Lander Road crosses the North Alternative corridor in the general vicinity of the town of Wayan. This portion of the road has not been evaluated for inclusion in the NRHP. Maps of the road system provided by Hutchison and Jones (1993) indicate that the portion of the Lander Trail through the North Alternative corridor is a possible route that is no longer visible. Information in the Archaeological Survey of Idaho database suggests the segment of the road crossed by the proposed transmission line has visible tracks, which would make it a NRHP-eligible segment.

Two historic structures were identified approximately 820 feet from the North Alternative corridor. These structures are false-front commercial buildings in the town of Henry. Neither of the two structures has been evaluated for potential NRHP status, and one of the structures may no longer be standing. A third structure, a residential dwelling located approximately 1,500 feet from the North Alternative corridor along Highway 34, has been recommended as not eligible for the NRHP.

Background research also included a review of historic General Land Office plats, which found one historic house and numerous roads and trails in the vicinity of the North Alternative corridor. Four roads, the Caribou Road, the Tin Cup Wagon Road/Road to Soda Spring, and two unnamed roads are likely to be crossed by the proposed North Alternative corridor. One of the unnamed roads is likely the current route for Highway 34.

Project-specific archaeological field surveys of the North Alternative corridor were conducted in June, August, and October 2012. Ten archaeological sites and five archaeological isolate finds were identified during the surveys. All of the sites and three of the isolates are historic and the other two isolates are prehistoric. None of the sites are recommended as eligible for the NRHP. Some portions of this corridor were not surveyed during the 2012 surveys because BPA did not have access to these portions. To the extent practicable, BPA will conduct additional follow-up surveys of the ROW and access roads in these portions in 2013.

South Alternative Archival Research and Cultural Resource Survey

An archival search through the Idaho SHPO for the South Alternative corridor identified 15 previous cultural resource studies conducted since 1990 within or near the corridor. The archival search indicated that five cultural resource sites have been identified within a half-mile of the South Alternative corridor although none are located within the corridor. These sites include historic and prehistoric resources. The two prehistoric lithic scatter sites were recorded in 1989 and 2003 and the three historic sites were recorded in 2003. It is unknown if these sites are recommended as eligible for the NRHP.

Project-specific cultural resource field surveys of the South Alternative corridor were conducted in September 2007 and September 2008. Five new historic sites were identified during surveys. Five isolates were noted, but not recorded. None of the sites are recommended as eligible for the NRHP. Like the North Alternative corridor, some portions of the South Alternative corridor were not surveyed during the previous surveys because BPA did not have access to these portions. To the extent practicable, BPA will conduct additional follow-up surveys of the ROW and access roads in these portions in 2013.

Alternative Route Options

North Alternative Route Options

There are currently no known cultural resources located along the Long Valley Road or North Highland options. The cultural resource surveys to be conducted in 2013 will confirm the absence of any cultural resources.

South Alternative Route Options

There are currently no known cultural resources located along Options 1 and 2 and along Options 3 and 4 east of the Blackfoot River crossing. The cultural resource surveys to be conducted in 2013 will confirm the absence of any cultural resources.

3.9.2 Environmental Consequences of the North Alternative

Because the general area has a rich history, there is potential for disturbing unknown cultural sites through inadvertent discoveries. Project construction (structures, counterpoise installation, pulling and tensioning sites, access roads) could damage or destroy cultural resources. Increased access to cultural resources due to project construction, operation, and maintenance activities could cause vandalism and looting of cultural sites.

Where possible, BPA would site transmission structures and access roads to avoid cultural resource sites along the corridor if sites are documented during cultural resource surveys. The location of the two sites near Henry is not precisely known, nor can it currently be determined whether the North Alternative corridor and access roads would impact them. Site-specific surveys would be conducted if necessary to determine if the sites are within the North Alternative corridor. Structure construction impacts would be limited to a relatively small area adjacent to the transmission line structures. Road construction and improvements are activities that have the most potential to disturb unknown cultural resources. Cultural resource monitors would be provided, as necessary, to observe ground-disturbing activities in areas of previously documented cultural sites. The monitors' presence would ensure proper handling of sensitive cultural resources if unearthed.

BPA attempts to avoid known sites whenever possible and uses trained cultural resource monitors to ensure unidentified sites are not inadvertently impacted (see Section 3.9.4, Mitigation). If any cultural resources are identified during follow-up cultural resources surveys in 2013, site boundaries would be delineated before construction to avoid impacting them during construction. As a result of BPA construction practices -avoiding areas and doing pre-construction surveys and construction monitoring—it is expected that there would be ***no*** to ***low*** impacts on cultural resources from the North Alternative.

The North Alternative could have impacts on cultural resources during operation and maintenance of the proposed transmission line. Based on typical maintenance activities, impacts are expected to be ***low***.

North Alternative Route Options

Under the Long Valley Road and North Highland options, the potential impacts on cultural resources would be similar to those described above (***no*** to ***low***). No known cultural resources exist along either option. If any cultural resources are identified during follow-up cultural resources surveys in 2013, site boundaries would be delineated before construction to avoid impacting them during construction.

3.9.3 Environmental Consequences of the South Alternative

As with the North Alternative, construction of structures and access roads and installation of counterpoise and pulling and tensioning sites under the South Alternative could disturb unknown cultural sites. Increased access to these cultural resources could also create an opportunity for vandalism and looting of cultural sites. However, transmission structures and access roads would be sited to avoid cultural resource sites along the South Alternative corridor similar to siting of the North Alternative. If any cultural resources are identified during follow-up cultural resources surveys in 2013, site boundaries would be delineated before construction to avoid impacting them during construction.

Five cultural resource sites and five isolates were identified in the South Alternative corridor. All were historic age resources. None of the sites or isolates was recommended eligible to the NRHP. Similar to the North Alternative, as a result of BPA construction practices, it is expected that the impacts under the South Alternative would be the same under the North Alternative (***no*** to ***low***).

Impacts during operation and maintenance of the South Alternative would be the same as those for the North Alternative (***low***).

South Alternative Route Options

Under Options 1 through 4 the potential impacts on cultural resources would be similar to those under the South Alternative (***no*** to ***low***). No known cultural resources exist along any of these options. If any cultural resources are identified during follow-up cultural resources surveys in 2013, site boundaries would be delineated before construction to avoid impacting them during construction.

3.9.4 Mitigation

The following mitigation measures have been identified to reduce or eliminate adverse impacts on cultural resources from the Project.

- Site transmission structures and access roads to avoid known cultural resource sites and limit ground disturbance.
- Document any cultural resources identified during follow-up cultural resources surveys in 2013, and delineate site boundaries of any such resources prior to construction.
- Further confirm cultural resource sites with pre-construction surveys and construction monitoring, including necessary consultation with the Idaho SHPO, potentially affected Tribes, land management agencies, and other interested parties.
- Prepare an Inadvertent Discovery Plan that details crew member responsibilities for reporting if cultural resources are encountered during construction. This plan should include directives to stop work immediately and notify local law

enforcement officials (if appropriate); appropriate BPA personnel; BIA, BLM, and USFS staff (if appropriate); interested parties; and the Idaho SHPO.

- Prepare a mitigation plan to protect sites if final placement of project facilities results in unavoidable adverse impacts to a significant cultural resource.
- Provide cultural resource monitors, as necessary, to observe ground-disturbing activities in areas of previously documented cultural sites.
- Limit ground-disturbing activities to structure sites, access roads, staging areas, and the proposed substation sites (see Section 3.1.4, Land Use).

3.9.5 Unavoidable Impacts Remaining after Mitigation

With appropriate procedures in place to determine protective measures (e.g., avoidance) and stopping construction activities if previously unknown artifacts are located, it is expected that there would be ***no*** to ***low*** impacts on cultural resources. There remains, however, the potential for BPA to unavoidably disturb previously unknown artifacts. Continuing consultation and follow-up cultural resources field studies will help identify resources and minimize potential impacts.

3.9.6 No Action Alternative

Under the No Action Alternative, cultural resources in the project area would continue to exist in their current condition without influence from the transmission lines.

3.10 Socioeconomics

3.10.1 Affected Environment

The project area is located in Caribou County; however information about Bannock County is also included for those socioeconomic elements where the Project's impact could extend beyond Caribou County.

The city of Soda Springs, the county seat for Caribou County, is the closest major community to the North and South alternative corridors. Additionally, the Hooper Springs Substation site is approximately 5 miles directly north of the city of Soda Springs. Other communities in close proximity to the alternative corridors include Henry, Conda, and Wayan. Communities farther from Soda Springs and the alternative corridors, but still within the general project area, include Grace (located 11 miles from Soda Springs), Bancroft (located 16 miles from Soda Springs), Lava Hot Springs (located 22 miles from Soda Springs), and Pocatello, the county seat for Bannock County (located 57 miles from Soda Springs).

Demographic and Economic Characteristics

Population

The total population of Caribou and Bannock counties for 2010 was 89,802, with a majority (92 percent) of the population located in Bannock County. In 2010, Caribou County had a population of 6,963 and Bannock County had a population of 82,839. Between 2000 and 2010, Caribou County had a decrease in population of 5 percent, while Bannock County's population increased by 10 percent over the same time period. These two counties are sparsely populated with a majority (65 percent) of Bannock County's population residing in the Pocatello census collection district and a majority (56 percent) of the population in Caribou County residing in the Soda Springs census collection district. Table 3-21 summarizes the population figures and trends for Caribou and Bannock counties.

In 2010, Caribou County's population density was 3.9 people per square mile, while Bannock County had a population density of 67.9 people per square mile. In comparison, Ada County, which holds the state capital, had a population density of 372 people per square mile (U.S. Census Bureau 2011a; NetState 2011).

Table 3-21. Idaho, Bannock County, and Caribou County Population Trends

Geography	1990	2000	2010	1990 to 2000		2000 to 2010	
				Absolute Change	Percent Change	Absolute Change	Percent Change
Idaho	1,006,749	1,293,953	1,567,582	287,204	29%	273,629	21%
Bannock County	66,026	75,565	82,839	9,539	14%	7,274	10%
Pocatello CCD	46,080	64,766	54,255	18,686	41%	−10,511	−16%
Caribou County	6,963	7,304	6,963	341	5%	−341	−5%
Soda Springs CCD	3,111	4,176	3,907	1,065	34%	−269	−6%
Wayan CCD	265	284	238	19	7%	−46	−16%
Bannock and Caribou counties	72,989	82,869	89,802	9,880	14%	6,933	8%

Source: U.S. Census Bureau 2011a, 2011b, 2011c.

CCD = Census Collection District.

[1] A census collection district is a subdivision of the county and includes population data from both the town or city under which it is named as well as the surrounding lands.

Hotels and Rentals

Approximately seven hotels and four RV parks are located in or around Soda Springs (Webster 2011, Wadman 2011, and Chamberlain 2011, personal communications). Availability for all hotels and RV parks in the area is low during the summer, which is the peak season for construction workers using the area hotels (Webster 2011, personal communication). Additionally, Grace has at least two motels and Lava Hot Springs has one RV park and at least six hotels. The city of Pocatello has numerous RV parks and hotels available.

Labor Force and Unemployment

In 2010, the total labor force (including unemployed) in the two-county area was 43,713, with an unemployment rate of 8.4 percent (see Table 3-22). Unemployment rates in the two-county area are slightly lower than the state unemployment rate of 9.3 percent. Much of Bannock County's workforce resides in Pocatello. The city of Pocatello had a slightly lower unemployment rate at 8.2 percent in 2010, up from 4.2 percent in 2008. The unemployment rates for the two-county area almost doubled between 2008 and 2010, reflecting the current economic downturn.

Table 3-22. Labor Force and Unemployment

Geographic Area	Annual 2010 Labor Force			Unemployment Rate	
	Labor Force	Employed	Unemployed	2008 Annual	2010 Annual
Idaho	757,939	687,321	70,618	4.7%	9.3%
Bannock County	39,931	36,555	3,376	4.4%	8.5%
Pocatello	27,674	25,413	2,261	4.2%	8.2%
Caribou County	3,782	3,479	303	5.8%	8.2%
Soda Springs	NA	NA	NA	NA	NA

Source: Bureau of Labor Statistics 2011
NA = not available

Employment by Industry

In 2009, employment in federal, state, and local government; retail trade; farm related sectors; mining; and healthcare accounted for a majority of employment in the project area. However, some industry employment data is not available due to the proprietary nature of the information.

The construction industry in Bannock County accounted for 5.7 percent of total employment, or 2,600 jobs, in 2009. Caribou County's construction industry employment numbers for 2009 are not available due to issues with the disclosure of confidential information. However, in 2006 this industry had a workforce of 349, representing 7.3 percent of the county's total workforce (Bureau of Economic Analysis 2011). Both Bannock and Caribou counties had an estimated combined 864 construction workers that were unemployed in 2011 (Cravens 2011, personal communication). In southeastern Idaho, employment in the construction industry as a percentage of total employment is projected to only slightly decline (a 0.5 percent decrease), between 2008 and 2018 (Idaho Department of Labor 2011a), and the occupation of electrical power-line installers and repairers is expected to slightly increase from 115 jobs in 2008 to 127 jobs in 2018 (Idaho Department of Labor 2011b).

Property and Resource Values

Agricultural (cultivated and grazing) and forested lands (primarily on the C-TNF) comprise the majority of the project area. However a number of areas are also important to the mining industry. A brief discussion of property and resource values provided by agriculture, timber, and mining is provided below.

Agriculture

The 2007 Census of Agriculture identified 454 farms in Caribou County. Approximately 75 of these farms (20 percent) are dedicated to wheat farming while 171 farms (38 percent) raise livestock. Most of the land north of Soda Springs is non-irrigated cropland, comprising mainly wheat, barley, and some oilseed crops (Bybee 2011, personal communication). Crops in Caribou County accounted for nearly 63 percent of the total market value of agricultural products sold in 2007, while livestock products accounted for the remaining total market value (USDA 2007a).

Grains, oilseeds, dry beans, and dry pea crops had a market value of $15,585,000 in 2007 (USDA 2007b). Table 3-23 shows a summary of agriculture statistics for Caribou County.

Table 3-23. Summary of Caribou County Agriculture in 2007

Summary Item	Caribou County
Number of farms	454
Land in farms (acres)	426,973
Farm acreage as a percentage of county lands	37.3%
Total market value of agricultural products sold ($)	55,012
Crops—wheat (number of farms)	75
Crops—wheat (acres)	41,059
Livestock and poultry (number of farms)	171
Livestock and poultry (number)	24,292

Source: USDA 2007b; U.S. Census Bureau 2011f

The total value of all taxable, assessed agricultural land in Caribou County in 2010 was $74,770,887. Average agricultural land values in Caribou County vary from $10 to $625 per acre, depending on many factors, such as irrigation. Grazing land ranges in value from $10 to $78 per acre, non-irrigated crop lands range in value from $106 to $230 per acre, and irrigated crop lands range from $406 to $625 per acre (Call 2011, personal communication).

Timber Lands and Harvest

The portions of the North and South alternatives located on the C-TNF contain stands of lodgepole pine, aspen/conifer, grass/shrub, mixed conifer, Douglas-fir, and aspen (USFS 2003b). Between October 2010 and March 2011 various types of timber were cut and sold in C-TNF, including subalpine fir, Douglas-fir, Engelmann spruce, lodgepole pine, softwoods, and aspen. The total value of cut sawtimber in C-TNF during this time was approximately $53,713, while the total value of fuelwood was $65,715; the total value of all cut and sold timber was $142,296 for this period (USFS 2011b).

Mining

Mining is an important industry in the state of Idaho and especially in southeastern Idaho. In 2004, Idaho ranked third in phosphate rock production in the United States. In 2010, mining companies associated with the Idaho Mining Association supported $857 million in economic contribution within the state. Approximately 65 percent of this economic activity, $558 million in economic contribution, occurred in southeastern Idaho, which includes Caribou, Bannock, and Power counties (Idaho Mining Association 2011a). In 2009 in Caribou County, mining employment was 317 and increased slightly to 333 in 2010 (Idaho Department of Labor 2011c).

Agrium Conda Phosphate Operations (also called Nu-West) is located in Soda Springs, Idaho, and is the largest major employer in Caribou County (Idaho Department of Labor 2011c).

Degerstrom Ventures is a mining contract company in Caribou County and is the third largest employer in the county (Idaho Department of Labor 2011d), whereas Simplot is the fourth largest employer in the county (Idaho Mining Association 2011b). Monsanto is the eighth largest employer in the county and operates the South Rasmussen Ridge Mine outside Soda Springs, Idaho (Idaho Mining Association 2011c).

Public Services

USFS, the state of Idaho, Caribou County, Soda Springs, and Pocatello, along with a number of hospitals, institutions, and companies provide services that could be utilized or affected by the Project. The towns of Henry, Conda, and Wayan are all unincorporated and do not provide public services.

Electric Utilities

Within Caribou County, electrical power is provided by Rocky Mountain Power, a division of PacifiCorp. However, within the city limits of Soda Springs power is supplied by Soda Springs Municipal Light and Power. Within Bannock County, Idaho Power Company services the cities and surrounding areas of Pocatello and Blackfoot. Rocky Mountain Power services the remaining portions Bannock County. Several electric utility companies have transmission lines and substations already in place in the project area. PacifiCorp has several transmission lines and substations located in and near Soda Springs and Wayan. These transmission lines are all lower than 230 kV in power and connect several businesses and towns in the area to the electric grid. Additionally, Idaho Power Company has a 226-mile-long, 345 kV-line that runs north of Soda Springs through Caribou County. Many of PacifiCorp's transmission lines connect to this line.

Law Enforcement

Law enforcement in the project area falls under the jurisdiction of the Caribou County Sheriff's Department, the Soda Springs Police Department, and the Idaho State Police. The sheriff's department actively patrols C-TNF land and works with C-TNF and other law enforcement agencies on a regular basis (Watkins 2011, personal communication). The North and South alternative corridors are also under the jurisdiction of the Idaho State Police (Dayley 2011, personal communication).

Fire Protection

The North and South alternative corridors cross through three fire department jurisdictions, including the Caribou County Volunteer Fire Department, the USFS Fire Service, and the BLM Fire Service. The Soda Springs Volunteer Fire Department operates within the city limits of Soda Springs and, under an agreement with the county, can also operate within a 5-mile radius of the station outside the city of Soda Springs. The Caribou County Volunteer Fire Department is based in Soda Springs. The department has mutual aid agreements with BLM and USFS. The USFS Fire Service serves USFS lands (Beck 2011, personal communication).

Medical Facilities

The closest hospital to the project area is Caribou Memorial Hospital in Soda Springs, Idaho. This hospital is capable of accepting and transporting patients using air ambulance services provided by Life Flight, though no Life Flight helicopters are stationed at this hospital (Peterson 2011, personal communication). The closest medical center with an air ambulance available is Portneuf Medical Center, located in Pocatello, Idaho.

Additionally, there are two medical clinics located in Caribou County. Lakeview Medical Clinic is located in Soda Springs, Idaho, and is a federally designated Rural Health Clinic (Caribou Memorial Hospital 2011). Rural Health Clinics provide access to primary care services (Department of Health and Human Services 2010). Health West Lava Clinic is located in Lava Hot Springs, Idaho (HealthWest 2007).

Education

The project area is located in the jurisdiction of the Soda Springs School District. However, two other school districts, Grace School District and North Gem School District are also in the general area. Soda Springs School District is the largest of these districts, with approximately 815 enrolled students (Hemmert 2011, personal communication).

Taxes

Total tax revenues for Bannock and Caribou counties for 2010 were $47,848,995 and $8,620,730, respectively. In Caribou County, total tax revenues were almost $9 million, with over half of the revenues provided by property tax receipts, whereas sales and use taxes accounted for 4 percent of county tax revenues. Bannock County has total revenues of almost $48 million, of which 44 percent come from property tax receipts and 7 percent from sales and use taxes (Klauser 2011; Mascarenas 2011; personal communication).

Property taxes are collected only by local taxing jurisdictions in Idaho and are not collected by the state (Idaho State Tax Commission 2010).

Environmental Justice

On February 11, 1994, President Clinton issued Executive Order 12898 Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. Executive Order 12898 directs agencies to address environmental and human health conditions in minority and low-income communities so as to avoid the disproportionate placement of any adverse effects from federal policies and actions on these populations.

A minority population exists where the percentage of minorities in an affected area either exceeds 50 percent or is meaningfully greater than in the general population. Low-income populations are identified using the Census Bureau's statistical poverty threshold, which is based on income and family size. The Census Bureau defines a "poverty area" as an area with 20 percent or more of its residents below the poverty threshold and an "extreme poverty area" as one with 40 percent or more below the poverty level (U.S. Census 2010).

The majority of the population (84 percent) in Idaho identify themselves as white in 2010. Both Bannock and Caribou counties had higher proportions of white populations than that of the state, 93 percent and 87 percent, respectively. Ninety-three and 100 percent of the Soda Springs and Wayan populations identified themselves as white, respectively. In 2010, 11 percent of Idaho's population identified themselves as Hispanic or Latino, while Bannock and Caribou county's Hispanic populations comprised 6 and 4 percent populations, respectively. Hispanic populations represent the largest minority group in the area in 2010 (U.S. Census Bureau 2011d).

Median household income in Bannock and Caribou counties in 2010 was $44,848 and $44,958, respectively, each approximately 3 percent less than the state's median income (U.S. Census Bureau 2011e). At $47,480 the city of Soda Springs had a median income approximately 2 percent higher than the state of Idaho's median income. Both the state of Idaho and Bannock County has approximately 14 percent of their population living below poverty while Caribou County has approximately 8 percent of its population living below poverty. Approximately 7 percent of the Soda Springs population was estimated to live below the poverty level in 2010 (U.S. Census Bureau 2011e).

As the percentage of minority or low-income populations in Caribou County and Soda Springs and Wayan is very low, no further detailed analysis of census tracts within close proximity to the North and South alternative corridors was undertaken. The data presented above do not indicate the presence of environmental justice communities. Therefore impacts on environmental justice are not considered further.

Alternative Route Options

North Alternative Route Options

The socioeconomic resources described above are the same as those under the Long Valley Road and North Highland options.

South Alternative Route Options

The socioeconomic resources described above are the same as those under Options 1 through 4.

3.10.2 Environmental Consequences of the North Alternative

Demographic and Economic Characteristics

Employment and Income

Construction of the North Alternative would employ approximately 50 people, a portion of whom, an estimated 10 workers, would be filled with members of the local construction workforce. No new employment would be anticipated for the operation of the transmission line or substations. The temporary construction workforce would bring new income to the region as construction workers spend their money in the local area, resulting in revenues for some local businesses, such as hotels, restaurants, gas stations, and grocery stores. Local expenditures would support jobs and incomes for these businesses and their employees. These employees would in turn spend their money in the local economy creating a multiplier effect. Because the majority of the construction workers would not be permanent residents of the area, induced spending would be considerably less than locally-residing employees, as construction workers would send a portion of their earnings to their home area. Overall spending from the construction of the North Alternative would be short term (over 16 months of the 2 year construction period) and is likely to have ***low*** socioeconomic impacts on the overall region. No adverse impacts are expected, although there may be some beneficial impacts as a result of increased spending in the local community during construction.

Population

Approximately 40 positions are expected to be filled by workers who would likely relocate temporarily to communities near the North Alternative corridor for the duration of project construction. There is no new employment anticipated for the operation of the transmission line and as a result, no change in population. As a result, population changes in the area are expected to last over the short term and be ***low***.

Hotels and Rentals

While hotels and motels can reach capacity in the spring and summer months in Soda Springs and other small towns in Caribou County, there are ample rental housing units available in Bannock and Caribou counties near the North Alternative corridor. Additionally, construction workers have been known to commute up to 2 hours each day to construction sites (Electric Power Research Institute 1982). There are abundant hotels and motels in Pocatello to accommodate construction workers, which would be located in this commuting distance.

Since permanent employees would not be required for the operation of the transmission line, no additional housing would be necessary within the North Alternative corridor area following completion of construction activities. As a result, short-term but likely beneficial, ***low*** impacts on local motel and rental units would occur.

Public Services

Impacts on public services and utilities (law enforcement, fire protection, medical services, schools, and utilities) would be ***low*** and would occur over the short term given the temporary increase in the local population as a result of the construction employees. The North Alternative would not result in a long-term increase in the local population that would require changes in demand for public facilities or services.

During construction of the North Alternative there would be ***low,*** adverse impacts on nearby communities from temporary lane closures and/or traffic delays (see Section 3.11 Transportation). There also would be increased roadside parking hazards during this time. However, access to all properties, including public facilities and social service agencies, would be maintained during construction, and local agencies and residents would be notified of upcoming construction activities and potential disruptions to transportation facilities. The North Alternative would not displace or otherwise negatively affect any agencies or organizations that provide public services to communities near the transmission line corridor. In addition, there would be ***no*** impacts on the public service infrastructure from the North Alternative.

Property and Resource Impacts

Property Values

The North Alternative is not expected to have long-term impacts on property values in the project area. Whenever land uses change, the concern is often raised about the effect the change may have on property values nearby. Zoning is the primary means by which most local governments protect property values. By allowing some uses and disallowing others, or permitting them only as conditional uses, conflicting uses are avoided. Some residents consider transmission lines to be an incompatible use adjacent to residential areas. The question of whether nearby transmission lines can affect residential property values has been studied extensively in the United States and Canada over the last 20 years or so, with mixed results.

In the 1990s, BPA contributed to the research when it examined the sale of 296 pairs of residential properties in the Portland/Vancouver metropolitan area of Oregon and Washington and in King County, Washington. The study evaluated properties adjoining 16 BPA high-voltage transmission lines (subjects) and compared them with similar property sales located away from transmission lines (comps). All of the sales were in 1990 and 1991 and adjustments were made for time and other factors. Study results showed that the subjects in King County were worth about 1 percent less than their matched comps, while the Portland/Vancouver subjects were worth almost 1.5 percent more (Cowger et al. 1996).

BPA updated this study in 2000 using 1994 and 1995 sales data. The sales of 260 pairs of residential properties in the King County and Portland/Vancouver metropolitan area were again reviewed. The residential sales analysis identified a small but negative impact ranging from 0 to 2 percent for those properties adjacent to the transmission lines as compared to those where no transmission lines were present. Although this study identified a negative effect, the results are similar to the earlier study and the differences are relatively small (Bottemiller et al. 2000).

A recent literature review pointed to small or no effects on sale price due to the presence of electric transmission lines. Some studies found an effect on sale price but the effect generally dissipated with time and distance. The effects ranged from approximately 2 to 9 percent (Jackson and Pitts 2010). A very recent study of sales of rural land parcels in central Wisconsin during the period from 2002 to 2008 found small, but no statistically significant negative price effects on the sale of properties encumbered by a transmission line easement (Jackson 2010).

Most studies have concluded that other factors (e.g., general location, size of property or structure, improvements, irrigation potential, condition, amenities, and supply and demand factors in a specific market area) are far more important criteria than the presence or absence of transmission lines in determining the value of residential real estate (Chalmers and Voorvaart 2009; Wolverton and Bottemiller 2003).

Constructing the transmission line is not expected to cause long-term negative impacts on property values along the North Alternative corridor or in the project area. Non-project impacts, along with other general market factors, are already reflected in the market value of properties in the area. These conditions are not expected to change appreciably. As a result, negative impacts from the North Alternative are expected to be short term and ***low***.

Agricultural Production

Construction of the proposed Hooper Springs Substation for the North Alternative would remove 6.8 acres of agricultural land from production and change it to a utility use. No impacts on agriculture are anticipated at the Lanes Creek Substation. During construction of the transmission line, potential impacts on agricultural production would include crop damages (depending on the time of year for construction across specific fields), soil disturbance, and loss of production for one or two growing seasons due to restrictions on planting within or adjacent to the North Alternative corridor due to ROW clearing, structure and counterpoise installation, pulling sites, and access road development.

Agricultural practices would be allowed to resume within the ROW as long as farming activities did not interfere or jeopardize the operation of the transmission line. Indirect impacts on agriculture as a result of the North Alternative would include interference with certain agricultural activities, such as the movement of machinery and equipment, obstacles for aerial spraying, or the movement of cattle or other livestock for grazing.

The majority of these agricultural lands would only be temporarily disturbed during construction activities, and not be affected in the longer term. Overall, impacts on agriculture production from the North Alternative would be ***low*** and would primarily occur during construction.

Grazing leases on C-TNF, BLM, or BIA lands may be affected by construction of the North Alternative, as areas would be closed to reduce the chances of injury to livestock. Few acres of grazing lands would be impacted from construction-related activities in terms of available forage for cattle. Once construction is complete, grazing would return to conditions similar to existing conditions. The overall impacts from the North Alternative on grazing and grazing leases would be ***low***.

Forest Lands and Timber Resources

Approximately 105.5 acres of the North Alternative corridor would cross through forested areas and require tree clearing. Additional danger trees located outside of the ROW would also require clearing. Almost all of this timber is located on C-TNF lands; though a small amount of clearing may be required on BLM parcels and private lands as well. All tall-growing vegetation would be cut to prevent vegetation from coming close enough to the conductor to cause an electric arc. Additional tree removal could be necessary on privately held lands and in areas where trees need to be cleared from falling onto the ROW.

There would be some positive economic effects associated with the timber harvest associated with the ROW clearing for the North Alternative. However, it is likely that this effect would be ***low*** and short term.

Mining

The North Alternative would not cross any past, present, or potential future mining areas or leases and therefore would have ***no*** impact on the mining industry.

Taxes

BPA would acquire land rights (easements) from private property owners for constructing, operating, and maintaining the North Alternative transmission line and access roads. The property owner would retain ownership of the property and continue to pay property tax on the entire parcel, including the land within BPA's easement. BPA would purchase property for its substations (and possibly substation access roads). Because BPA is a federal agency and exempt from paying local property taxes, Caribou County would not collect property taxes on the property acquired in fee for the substations and substation access roads. Project and construction worker spending would slightly increase sales and use tax receipts to municipal and county governments. Therefore, tax impacts under the North Alternative would be ***low***.

Since the substations and transmission line for the North Alternative would be managed remotely, the only potential impact from operation of the line would include potential overnight stays and limited spending in the local communities during maintenance activities. However, the overall impact of operation and maintenance throughout the life of the transmission line would be ***low***.

North Alternative Route Options

The Long Valley Road Option would remove approximately 4.2 miles of ROW from state lands and place approximately 4.8 additional miles of ROW on private land that is currently in agricultural use. The additional private land acreage is currently in active grazing and crop cultivation, so there could be additional impacts on agricultural production and farm income; however, impacts on agricultural use would remain ***low.*** Impacts on all other socioeconomic resources would be the same as that described above.

The North Highland Option would remove approximately 1.5 miles of ROW from private lands in grazing use and place approximately 1.2 additional miles of ROW on C-TNF lands. The additional C-TNF land acreage is currently forested, and under the North Highland Option, roughly an additional 10 acres of forest would be cleared compared to the North Alternative. Although all tall-growing vegetation would be cut on the ROW, there would be some positive economic effects associated with the timber harvest. However, it is likely that this effect would be ***low*** and short term.

Impacts on all other socioeconomic resources would be the same as that described above.

3.10.3 Environmental Consequences of the South Alternative

Demographic and Economic Characteristics

Employment and Income

Construction of the South Alternative would employ the same number of people (approximately 50 people) as the North Alternative some of which would be local (about 10 workers). New employment is not anticipated during operation of the transmission line or substations. During construction of the South Alternative, temporary construction workers would spend money in the project area, resulting in revenues for some local businesses, such as hotels, restaurants, gas stations, and grocery stores. As with the North Alternative, local expenditures from the construction of the South Alternative would support jobs and incomes for these businesses and their employees. However, spending from construction of the South Alternative would be short term (over 16 months of the 2 year construction period) and is likely to have ***low*** but beneficial socioeconomic impacts on the overall region.

Population

Similar to the construction of the North Alternative, about 40 positions are expected to be filled by workers from elsewhere who would likely relocate temporarily to communities near the South Alternative corridor. Additionally, new employment is not anticipated during operation of the South Alternative and as a result, population changes in the area are expected to be short term and ***low***.

Hotels and Rentals

As with the North Alternative, there are ample rental housing units available in Bannock and Caribou counties for construction of the South Alternative. Additionally, construction workers would commute from areas within 2 hours of the construction sites such as Pocatello.

Additional housing for the South Alternative would not be required during operation. As a result, short-term but likely beneficial, ***low*** impacts on local motel and rental units would occur under the South Alternative.

Public Services

Impacts on public services and utilities under the South Alternative (law enforcement, fire protection, medical services, schools, and utilities) would be the same of the North Alternative (***low*** and short term).

During construction of the South Alternative, impacts from temporary lane closures and traffic delays would be same as those under the North Alternative: ***low***, although, there could be increased roadside parking hazards during this time. As with the North Alternative, access to all properties along the South Alternative would be maintained during construction. Local agencies and residents would be notified of upcoming construction activities and potential delays. The South Alternative would not displace or otherwise negatively affect any agencies or organizations that provide public services to communities near the transmission line corridor. Additionally, there would be ***no*** impacts on the public service infrastructure from the South Alternative.

Property and Resource Impacts

Property Values

As with the North Alternative, the South Alternative is not expected to have long-term impacts on property values in the project area. Negative impacts from the South Alternative are expected to be short term and ***low***.

Agricultural Production

Construction of the Hooper Springs Substation for the South Alternative would remove the same 6.8 acres from agricultural land as the North Alternative. Crop damage, soil disturbance, and loss of production could occur during transmission line construction from clearing, structure and counterpoise installation, pulling sites, and access road development. As with the North Alternative, agricultural practices would be allowed within the South Alternative ROW as long as farming activities do not interfere or jeopardize the operation of the transmission line. Indirect impacts on agriculture from the South Alternative would be the same as the North Alternative; interference with certain agricultural activities could occur. The majority of the agricultural lands along the South Alternative would only be temporarily disturbed during construction activities, and would not be affected in the longer term. Impacts on agriculture production from the South Alternative would the same as those under the North Alternative (***low*** and short term).

Similar to the North Alternative, C-TNF and state land grazing leases may be affected during construction if work areas are closed. After construction, grazing would return to existing conditions. Impacts from the South Alternative on grazing and grazing leases would be ***low***.

Forest Lands and Timber Resources

Approximately 64 acres of the South Alternative corridor would cross through forested areas and require tree clearing. As with the North Alternative, danger trees located outside of the ROW also would be cleared. Almost all of this timber is located on C-TNF lands; though a small amount of clearing may be required on BLM parcels and private lands as well. There would be some positive economic effects associated with timber harvest however, it is likely that this effect would be ***low*** and short term.

Mining

The South Alternative corridor would cross several past, current, and future potential mining sites, as described in Section 3.1.1. Construction-related impacts would result in short-term access issues and could cause negligible delays in mining operations and reclamation efforts. However, the construction is unlikely to impact the mining industry in the area in a meaningful way. The footprint of the transmission corridor and access roads would reduce the total area of potential mining in the areas crossed by the alternative. However, the value of the mining resources under the transmission line corridor and associated access roads is unknown. The reduction in mining areas could result in long-term local ***low*** to ***moderate*** impacts depending on the value of the resource that would be no longer accessible to the mining industry. It is unlikely that mining in southeast Idaho would be impacted.

Taxes

As with the North Alternative, BPA would acquire land rights (easements) from private property owners for the South Alternative transmission line and access roads. Property owner would retain ownership and continue to pay property tax on the entire parcel, including the land within BPA's easement. For the South Alternative, BPA would purchase the same property for the Hooper Springs Substation (and possibly the substation access roads) as the North Alternative. As discussed above for the North Alternative, because BPA is a federal agency, Caribou County would not collect property taxes on fee-owned property. Similar to the North Alternative, project and construction worker spending for the South Alternative would slightly increase sales and use tax receipts to municipal and county governments; tax impacts would be ***low*** and positive.

Similar to the North Alternative, maintenance of the South Alternative may require overnight stays and limited spending in the local communities resulting in a ***low*** but positive impact on local taxes.

South Alternative Route Options

Impacts associated with construction and operation of Options 1 and 2 would be the same as the South Alternative. Options 3 and 4 would remove more agricultural land from production than the South Alternative and Options 1 and 2, possibly resulting in crop damage and soil disturbance during transmission line construction, though they would impact fewer mining areas. As with the South Alternative, agricultural practices would be allowed within the ROWs for these options; impacts would be same as under the South Alternative. Impacts on all other socioeconomic resources would be the same as that described above.

3.10.4 Mitigation

The following mitigation measures have been identified to reduce or eliminate socioeconomic impacts from the Project.

- Compensate landowners for any damage to crops or property during construction or operation and maintenance activities, as appropriate.
- Compensate landowners for reconfiguration of irrigation systems due to placement of project facilities.
- Compensate landowners at fair market value for any new land rights acquired for ROW or access road easements.
- Plan and conduct construction activities to minimize interference with agricultural activities (see Section 3.1.4, Land Use).
- Use local rock sources for road construction where practicable (see Section 3.14.4, Air Quality).

3.10.5 Unavoidable Impacts Remaining after Mitigation

Potential unavoidable impacts on socioeconomic resources would include the loss of farm production or grazing lands due to structure placement. Although landowners would be compensated for the easements, a loss in production would still occur. Modest economic benefits could include increased employment in the area, local purchase of goods and services, and increased tax revenues.

3.10.6 No-Action Alternative

Under the No Action Alternative, the Project would not be built, so the socioeconomic impacts related to the construction, operation, and maintenance of the transmission lines would not occur.

3.11 Transportation

3.11.1 Affected Environment

The project area is served by a well-developed regional road system. The principal road in the area is Highway 34, classified as a major rural collector highway and operated by ITD. Highway 34 is a federally designated and ITD-designated scenic byway known as the Pioneer Historic Byway (ITD 2011a). Highway 34 diverges from Highway 36 near Preston in Franklin County, Idaho and crosses U.S. Route 30 at Soda Springs before continuing north through the C-TNF, Soda Springs Ranger District and crossing into the state of Wyoming. Highway 34 provides access to the Blackfoot Reservoir west of the study area and to Gray's Lake National Wildlife Refuge, north of the project corridor.

The segment of Highway 34 within the North Alternative corridor extends from mile point (MP) 62.7, north of Soda Springs near the proposed Hooper Springs Substation, to MP 100.5, where the North Alternative corridor connects with the Lanes Creek Substation. The South Alternative corridor crosses over Highway 34 near MP 64 and travels along Blackfoot River Road to the Narrows. Highway 34 is a two-lane arterial roadway with an approximate 60-foot-wide ROW in the project area. Based on IDT's 2008 annual average daily traffic counts on Highway 34, total vehicle counts between Soda Springs and Conda range from 2,200 and up to 6,700 (see Table 3-24). North of Conda, traffic volume on Highway 34 decreases with total vehicle counts ranging from 700 to 330. Overall, the traffic conditions along Highway 34 have a Level of Service (LOS) B between Soda Springs and Conda and a LOS A between Conda and Freedom (Wyoming). The Transportation Research Board's 2000 Highway Capacity Manual defines LOS A for unsignalized roadways as "little or no delay (less than10 seconds)" and LOS B for unsignalized roadways as "short traffic delays (10.1 to 15.0 seconds)." Traffic conditions along Highway 34 allow motorists freedom of travel at comfortable speeds with few restrictions.

Other local roads within the North and South alternative corridors are rural roads (often unpaved) that are maintained either by ITD or by Caribou County. They include the following roads by functional classification:

- Primary (minor collector) rural roads: Conda Road, which provides the sole access to Conda from Highway 34; Blackfoot River Road, which serves as the main corridor for entry into C-TNF lands within the South Alternative corridor; China Cap Road and North Reservoir Road, which provide, respectively, south and north accesses to Blackfoot Reservoir and its campgrounds; Grays Lake Road, which provides access to the Grays Lake National Wildlife Refuge; and Diamond Creek Road, which provides access to the South Alternative corridor at its eastern terminus at the proposed connection facility.
- Secondary rural roads and trails: Hooper Road and Threemile Knoll Road, which provide access to the proposed Hooper Springs Substation near the existing PacifiCorp Threemile Knoll Substation; Haul Road, which is a private hauling road to the Agrium Conda Phosphate Plant and related industrial mining operations; as well as Long Valley Road, Henry Cutoff Road, Wayan Loop West, Wayan Loop South, Lanes Creek Road, Gravel Creek Road, and Cutoff Road,

which provide access to the various private and state/federal lands within the North Alternative corridor. Many of those secondary rural roads along with other USFS designated trails (including for motorized and non-motorized uses) are located throughout C-TNF and serve as access roads for recreation, special uses, timber management, range management, minerals development, and fire protection (USFS 2003a).

Table 3-24. 2008 Annual Average Daily Traffic Counts on State Highway 34

Segment	Beginning MP	Ending MP	Passenger	Commercial	Total AADT
Between Soda Springs and Conda	57.8	58.1	6,350	350	6,700
	58.1	58.6	5,450	350	5,800
	58.6	59.8	2,550	350	2,900
	59.8	59.8	2,250	350	2,600
	59.8	63.5	1,850	350	2,200
Between Conda and Wyoming Border	63.5	64.8	530	150	680
	64.8	69.9	550	150	700
	69.9	91.9	430	70	500
	91.9	93.9	300	30	330
	93.9	100.5	330	20	350
	100.5	112.6	380	20	400
	112.6	113.6	530	30	560

Source: ITD 2011b
AADT = annual average daily traffic.

The North and South alternative corridors are located more than 4 miles from the nearest airport. There is one railroad in the project area called the Union Pacific Dry Valley Branch Railroad, a 24-mile phosphate mining rail line running from Soda Springs to the North Maybe Mine (Idaho Public Utilities Commission 2005). The South Alternative corridor travels along the Dry Valley Branch Railroad as it travels east from the Blackfoot River crossing to just west of the Narrows.

North Alternative Route Options

The same roads described above are also in the general vicinity of the Long Valley Road and North Highland options.

South Alternative Route Options

The same roads described above are also in the general vicinity of Options 1 through 4. Option 3 crosses Highway 34 near MP 70, while Option 4 crosses Highway 34 near MP 66.7.

3.11.2 Environmental Consequences of the North Alternative

During the construction period (estimated at 16 months over a 2 year period), temporary impacts from the North Alternative would result from increased traffic volumes with possible delays and road closures, and possible wear and tear to public roadway conditions as a result of heavy construction vehicles accessing the Project. Road improvements would include the upgrading of existing USFS, BLM, and BIA roads; upgrading of county and private roads as necessary to allow access to construction vehicles and equipment; construction of new access roads; and construction and removal of temporary access roads. See Section 3.2, Recreation, for a discussion about possible unauthorized access and use of ROW access roads.

Traffic Conditions

From the North Alternative staging areas, local access to work sites or assembly yards would use a combination of Highway 34, county roads (e.g., mainly Hooper Road, Threemile Knoll Road, Conda Road, Blackfoot River Road, Wayan Loop and Lanes Creek Road), new access roads, or existing access roads (private or public). Access to the Hooper Springs Substation site, located approximately 1.5 miles east of Highway 34, would be from a combination of Highway 34, Hooper Road, and Threemile Knoll Road. Access to the Lanes Creek Substation site would be via Highway 34 and Lanes Creek Cutoff Road.

Highway 34 would likely be the most traveled road during the North Alternative construction period. Daily peak construction activities and movement of construction vehicles between staging areas and work sites would temporarily increase traffic and reduce speed of travel. To reduce the potential for construction-related traffic to congregate around staging areas, the staging areas for the North Alternative would be sited away from major rural collector highways, especially Highway 34, to the extent practical.

Some traffic delays would occur, but would be periodic, short term, and limited to specific times of day (e.g., early morning deliveries and employee shift periods). Aside from some unavoidable road crossings and necessary construction safety measures for crossing transmission lines over state highways, it is expected that no major road closure to Highway 34 would be required under the North Alternative. Only brief (less than 1 hour) and appropriately timed closures (outside morning and evening peak periods) would occur along the five transmission lines crossings over Highway 34. Given its available capacity at LOS A and B, traffic volumes on Highway 34 would not result in changes in LOS with the increased volume from construction-related vehicles.

The use of all other county and local roads for construction traffic would be limited to roads necessary to gain access to the North Alternative staging areas and work sites. Based on the relatively low average daily traffic counts on these roads, and the relatively short-term use any specific road is likely to receive, temporary traffic delays are likely to occur in localized spots while construction is taking place in adjacent or nearby areas. If construction activities cause temporary traffic blockages on local roadways, such temporary blockages would not last more than a few hours and traffic would be routed around affected intersections.

Overall, construction of the North Alternative (including ROW clearing, structure installation, and access road development) would be expected to have a short-term, ***low*** impact on traffic conditions within the corridor. Construction of the substations would have similar traffic impacts as the transmission line; impacts would be localized and limited to roads used to access the substation sites and intersections used to enter and exit Highway 34. Residential areas near the proposed Hooper Springs Substation could also experience temporary traffic increases or disruption from construction vehicles using local roads to access the site. Substation construction is expected to have a ***low*** impact on traffic conditions in the North Alternative corridor.

Public Roadway Conditions

Vehicles and equipment used for the North Alternative (e.g., overhead line cranes, concrete trucks, construction equipment, materials, and delivery trucks) could damage roads and bridges, shortening the life of paved and unpaved road surfaces and eventually leading to cracking and/or rutting. This would be especially true for heavy equipment or trucks carrying heavy construction materials, which have more potential to damage road surfaces than lighter passenger vehicles. It is expected that heavy loads transported on state and county roads would be within legal size and load limits. Where compliance with size and load limits is not possible, valid oversize and/or overweight permits would be required. These permits could stipulate that it is the responsibility of the construction contractors to rehabilitate or reconstruct deteriorated roadways and structures during and after use. Overall, short-term construction-related impacts on roadway conditions from the North Alternative would be ***low***.

Operation and maintenance activities over the life of the North Alternative would include helicopter inspections every 2 years, and intermittent and brief access by small maintenance vehicles for vegetation control and minor repair work within the corridor. Large construction vehicles would only be required when major repairs are identified. Traffic associated with operation and maintenance of the substations would be limited to intermittent access by maintenance vehicles, as both substations would be unmanned. As a result, operation and maintenance of the North Alternative would result in ***low*** to ***no*** long-term impacts on transportation resources.

North Alternative Route Options

The Long Valley Road Option would result in a negligible increase in traffic on Blackfoot River Road and Long Valley Road when compared to the North Alternative. It is highly unlikely that this modification would result in any change to the overall resource impact in terms of intensity or duration as described above. The Long Valley Road Option would have a ***low*** impact on transportation during the construction phase of the proposed transmission line and substations, and ***low*** to ***no*** impacts during operation and maintenance.

The North Highland Option would result in some traffic delays along Highway 34 where the option would cross over the highway during construction. However, impacts on transportation would be the same as the North Alternative (***low***) because there would also be a Highway 34 crossing for that alternative in this area. The North Highland Option would have ***low*** to ***no*** impacts during operation and maintenance.

3.11.3 Environmental Consequences of the South Alternative

As with the North Alternative, temporary impacts would occur during the construction period (estimated at 16 months over a 2 year period) for the South Alternative. Traffic delays, road closures, and possible wear and tear to public roadway conditions from use by heavy equipment would occur. Similar to the North Alternative, existing roads would be upgraded and new access roads constructed along with construction and removal of temporary access roads for the South Alternative. See Section 3.2, Recreation, for a discussion about possible unauthorized access and use of ROW access roads.

Traffic Conditions

From the South Alternative staging areas, access to work sites or assembly yards would use a combination of Highway 34, Blackfoot River Road, Diamond Creek Road, new access roads, or existing access roads (private or public). Access to the proposed Hooper Springs Substation site would be the same as for the North Alternative.

Blackfoot River Road and Highway 34 would be the most traveled roads during the South Alternative construction period. Similar to the North Alternative, daily peak construction activities between staging areas and work sites would temporarily increase traffic and reduce speed of travel. However, as with the North Alternative, staging areas for the South Alternative would be sited away from Highway 34 to reduce construction-related traffic near staging areas.

Short-term traffic delays would occur under the South Alternative, but these would be limited to specific times of day. As with the North Alternative, only brief road closures (less than 1 hour and outside morning and evening peak periods) would be expected on Highway 34 at the transmission line crossing so traffic volumes on Highway 34 would not result in changes in LOS. Along Blackfoot River Road, some short-term traffic delays could also occur where the line would cross the road.

Construction within the corridor for the South Alternative (including ROW clearing, structure installation, access road development, and substation construction) would have the same impact on traffic conditions as the North Alternative (short term and ***low***).

Public Roadway Conditions

As with the North Alternative, construction vehicles and equipment used for the South Alternative could damage Blackfoot River Road and other roads and bridges. It is expected that heavy loads transported on state and county roads would be within legal size and load limits but where compliance with size and load limits is not possible, valid oversize and/or overweight permits would be required. Overall, short-term construction-related impacts on roadway conditions from the South Alternative would be the same as the North Alternative (***low***).

Operation and maintenance activities under the South Alternative would be the same as the North Alternative. As a result, impacts on transportation resources from the South Alternative would be ***low*** to ***none***.

South Alternative Route Options

Impacts on traffic conditions and public roadway conditions under Options 1, 2, 3, and 4 would be the same as those under the South Alternative (short term and ***low***).

3.11.4 Mitigation

The following mitigation measures have been identified to reduce or eliminate impacts on transportation from the Project.

- Limit road improvements to the minimum amount necessary to safely move equipment, materials, and personnel in and out of the construction area.
- Develop a traffic control plan (for circulation, safety, management, signage, and detours if necessary). Consider road conditions, wear and tear on roads, bridges, stream crossings, traffic control, post-construction repair, reclamation, and access control.
- Comply with all county, state, and federal traffic management and road design requirements.
- Limit the use of all other county, local, USFS and BLM roads for construction traffic to roads necessary to access staging areas and work sites.
- Schedule heavy and over-sized truck trips outside of peak morning and evening commute hours.
- Store construction materials only in designated staging areas.
- Restore public roadways to preconstruction conditions upon completion of project construction activities.
- Surface all permanent access roads with rock (see Section 3.5.4, Geology and Soils).

3.11.5 Unavoidable Impacts Remaining after Mitigation

Unavoidable impacts on transportation during the construction phase would consist of short-term traffic delays due to construction vehicle travel and roadway rehabilitation and repair. During operation and maintenance of the transmission line, occasional traffic delays would be possible.

3.11.6 No Action Alternative

Under the No Action Alternative, the Project would not be built, so impacts on transportation related to the construction, operation, and maintenance of the transmission lines would not occur.

3.12 Noise

3.12.1 Affected Environment

Noise

Noise is commonly defined as unwanted sound that disrupts normal human activities or diminishes the quality of the human environment. Transient noise sources, such as passing aircraft or motor vehicles, produce noise that is usually of short duration and excluded from regulation. Stationary sources such as substations or mining operations can emit noise over a longer period. Ambient noise is all noise generated in the vicinity of a site by typical noise sources, including traffic, wind, neighboring industries, and aircraft. The total ambient noise level is a typical mix of noise from distant and nearby sources, with no particular dominant sound (BPA 2010a).

Sources of temporary construction-related noise associated with electrical transmission systems include structure installation activities involving the use of heavy equipment, helicopters, and blasting; high levels of human activity around construction sites; construction of substations; access road construction; clearing of ROW; and pulling of conductors. Transmission operating-related noise includes noise associated with maintenance equipment, use of helicopters twice yearly to inspect the line, transmission line corona, and electrical transformer "hum."

Environmental noise, including transmission line noise, is usually measured in decibels on the A-weighted scale (dBA). This scale models sound as it corresponds to human perception. Table 3-25 shows typical noise levels for common sources expressed in dBA. Noise exposure depends on how much time an individual spends in different locations.

Table 3-25. Common Noise Levels

Sound Level (dBA)	Noise Source or Effect
110	Rock-and-roll band
80	Truck at 50 feet
70	Gas lawnmower at 100 feet
60	Normal conversation indoors
50	Moderate rainfall on foliage
40	Refrigerator
25	Bedroom at night

Source: Adapted from BPA 1986, 1996

Corona is the partial electrical breakdown of the insulating properties of air around the conductors of a transmission line. Corona-generated noise can be characterized as a hissing, crackling sound that is accompanied by a 120 Hertz hum under certain conditions. Corona noise from transmission lines generally occurs during foul or wet weather.

Noise levels and corona-generated noise in particular vary over time. To account for fluctuating sound levels, statistical descriptors have been developed for environmental noise. Exceedance levels (L levels) refer to the A-weighted sound level that is exceeded for a specified percentage of the time during a specified period. Thus, L_{50} refers to a particular sound level that is exceeded 50 percent of the time. L_5 refers to the sound level exceeded 5 percent of the time. Sound-level measurements and predictions for transmission lines are expressed in terms of exceedance levels, with the L_5 level representing the maximum level and the L_{50} level representing a median level.

EPA has established a guideline of 55 dBA for the average day-night noise level (Ldn) in outdoor areas (EPA 1974; EPA 1978). In computing this value, a 10 dBA correction (penalty) is added to night-time noise between the hours of 10:00 p.m. and 7:00 a.m. BPA has established a design criterion for corona-generated audible noise from transmission lines of 50 dBA for L_{50} (foul weather) at the edge of the ROW (BPA 2006). Likewise, BPA's design criterion for substation noise is 50 dBA at a substation property line.

Sources of Existing Noise within the Project Area

Along the project corridor of the North and South alternatives, existing noise levels vary with the corridors' proximity to agricultural activities, roadway traffic, mining activities, and urban development. Most of the project corridor of the North and South alternatives crosses sparsely developed, rural agricultural lands and undeveloped public lands (USFS, BLM, BIA, and state of Idaho). Agricultural activities associated with ranching and the cultivation and harvesting of crops are seasonal, and can be considered intermittent sources of background noise. The nearest residential structure is located about 300 feet from both the North and South alternatives' ROWs.

In the relatively more developed areas, traffic and noise associated with human activity are major contributors to background noise. The PacifiCorp Threemile Knoll Substation contributes to existing noise impacts in the vicinity of the proposed Hooper Springs Substation. The Union Pacific Dry Valley Branch railroad and vehicular traffic on Highway 34 are sources of intermittent noise along the project corridor for the North Alternative. The Monsanto Chemical Company Soda Springs Plant, located approximately 1.3 miles southeast of the proposed Hooper Springs Substation site, is also a source of noise related to the processing of phosphate ore. The vehicle traffic, mining operations and manufacturing activities associated with the Simplot Conda/Woodall Mountain Mine and adjacent Agrium fertilizer plant in Conda is a source of noise along the project corridor for the South Alternative. Noise from ongoing phosphate mining activity is also prevalent within Caribou County, but tends to be localized and attenuated by vegetation and topography to levels that are not discernible for long distances to humans. Overall, noise levels in and near the project corridors for the North and South alternatives are generally low.

Alternative Route Options

North Alternative Route Options

The Long Valley Road Option and the North Highland Option each have noise levels similar to other comparable areas within the project corridor of the North Alternative described previously.

South Alternative Route Options

Options 1 through 4 have noise levels similar to other comparable areas within the project corridor of the South Alternative as previously described.

3.12.2 Environmental Consequences of the North Alternative

Construction of the North Alternative would generate noise in the project area. Noise levels also may periodically increase above ambient levels during operation and maintenance activities. This noise would have the potential to affect nearby noise sensitive areas, such as residences.

Construction activities would create noise that would be intermittent and limited to the duration of construction. Potential sources of noise may include:

- ROW tree clearing;
- construction and improvement of access roads;
- structure and substation site preparation (vegetation clearing and grading);
- erection of steel or wooden structures;
- helicopter assistance; and
- potential blasting.

Construction of the Hooper Springs Substation would create intermittent, short-term noise associated with vegetation clearing and grading, construction and installation of substation infrastructure, and construction-related traffic. Substation construction is expected to be completed using conventional construction equipment and would not require the use of helicopters or blasting. Since the BPA Lanes Creek Substation would be constructed within the boundaries of the existing LVE Lanes Creek Substation, no grading or vegetation clearing would be necessary. Construction noise would be attributable to pneumatic tools and smaller conventional construction equipment along with construction-related traffic.

Similar to substation construction, access roads and transmission line structure site preparation would use conventional construction equipment. Table 3-26 summarizes noise levels produced by typical construction equipment that would likely be used for the North Alternative.

To account for fluctuating sound levels, statistical descriptors have been developed for environmental noise. The equivalent sound level (L_{eq}) is generally accepted as the average sound level. The overall noise caused by the conventional equipment involved in construction is estimated to be 89 decibel L_{eq} at a reference distance of 50 feet. Noise produced by construction equipment would decrease with distance at a rate of about 6 decibel per doubling of distance from the site. Based on that assumed attenuation rate, Table 3-27 shows the estimated construction noise levels at various distances from the construction site.

Table 3-26. Noise Levels Produced by Typical Construction Equipment

Type of Equipment	Maximum Level (dBA) at 50 Feet
Road Grader	85
Bulldozers	85
Heavy Trucks	88
Backhoe	80
Pneumatic Tools	85
Crane	85
Combined Equipment	89

Source: Thalheimer 1996

Table 3-27. Construction Noise in the Vicinity of a Representative Construction Site[1]

Distance from Construction Site (feet)	Hourly L_{eq} (dBA)
50	89
100	83
200	77
400	71
800	65
1600	59

Source: BPA 2010b

[1] Calculation Assumptions: Equipment used: (1) grader, bulldozer, heavy truck, backhoe, pneumatic tools, concrete pump, and crane.

Reference noise level: 89 dBA (L_{eq}).

Distance for the reference noise level: 50 feet.

Noise attenuation rate: 6 dBA/doubling.

This calculation does not include the effects, if any, of local shielding or atmospheric attenuation.

Although daytime construction activities are excluded from noise regulations, these regulations can serve as a useful guideline for assessing noise impacts on individuals or residences located in the vicinity of the project corridor of the North Alternative. For the purposes of this evaluation, it was assumed that construction noise levels equal to or less than 50 dBA would be a low impact. If construction noise levels exceed 50 dBA, this would be a moderate to high, although temporary impact.

Residential land use within the project area is low. The corridor for the North Alternative consists mainly of open range, undeveloped land, and agricultural land with few residences that could be affected by noise from land-based construction activity. The single residence within 300 feet of the ROW may experience a ***moderate*** to ***high*** temporary, elevated noise levels associated with construction activities, equipment, and traffic.

BPA's construction contractor may elect to use a helicopter to assist with stringing of conductors. Noise associated with helicopter use would be temporary and intermittent. It would generally take less than 10 minutes to string the conductor at each structure, and BPA estimates that helicopters would not be in any given line mile for more than 3 hours. A loaded cargo helicopter flying 250 feet away produces noise that is roughly 95 dBA, which is the same amount of noise produced by a diesel locomotive 100 feet away (Helicopter Association International 1993). Homes within approximately 1 mile of the helicopters would be exposed to temporary noise levels above 65 dBA. Helicopter noise would result in a ***moderate*** to ***high*** impact that would be limited to a short duration (hours).

Possible occasional midday blasting may be required at some structure sites in rocky areas where conventional excavation of structure footings would not be practical. Blasting would produce a short noise like a thunderclap that could be audible for 0.5 mile or more from the site. If bedrock blasting is required, it could produce a high temporary noise impact on a few residents or visitors within 1 mile, and a lesser temporary impact on residents and visitors within 1 to 2 miles of the substation. Overall, blasting would result in a temporary ***moderate* to *high*** impact.

Maintenance noise would be occasional and temporary under the North Alternative. About twice annually, a helicopter would fly the line to look for any problems or repair needs. When and if maintenance needs arise, field vehicles would be used to access trouble spots. Noise levels generated by maintenance activities would be similar to the construction noise levels presented in Table 3-27, depending on the nature of the repair activity. Given the short duration and infrequent occurrence of audible operation noise and maintenance activities, the noise impacts would typically be ***low***.

Further, during operation, the proposed line would result in minimal corona-generated foul weather audible noise at the edge of the ROW. BPA design criteria for new transmission line construction require that noise levels at the edge of the ROW under typical conditions of foul weather, altitude, and system voltage are below the EPA outdoor activity noise guideline of 55 dBA (EPA 1974; EPA 1978). Corona generated noise is of concern primarily for transmission lines operating at voltages of 345 kV and above (BPA 2006). Moreover, audible noise would decrease with distance away from the proposed ROW. As the North Alternative would ultimately operate at a lesser voltage (115 and 138 kV), actual audible noise levels from corona activity would be ***low*** and would diminish with distance.

At the proposed Hooper Springs Substation site, noise from substation equipment (primarily transformers) and nearby transmission lines would be the primary long-term source of noise. Noise from existing substation equipment and transmission lines would remain the primary source of environmental noise at the existing Lanes Creek Substation site. BPA design criteria require audible noise levels for substations to meet a maximum level of 50 dBA at the substation property line (BPA 2006). In addition, the Hooper Springs Substation would be separated from areas of residential development to the east by Threemile Knoll, a ridgeline that would further buffer any noise impacts associated with both construction and operation of the substation. Long-term noise impacts from the operation of the proposed substations would be ***low.***

North Alternative Route Options

Long Valley Road Option

The Long Valley Road Option would move a portion of the proposed ROW onto private land that is currently in agricultural use. Since this land is currently in active grazing and crop cultivation, there are few nearby residences. Therefore, it is unlikely that the Long Valley Road Option would result in a change to the overall noise impact levels as described above. Helicopter use and blasting during construction would result in ***moderate*** to ***high*** noise impacts on sensitive receptors and impacts from operation of the transmission line would be ***low***.

North Highland Option

The North Highland Option would remove a 1.5-mile portion of the proposed ROW from private grazing land and reconfigure the ROW to cross an additional 1.2 miles of C-TNF lands along with a small amount of forested private land. One residence would be approximately 750 feet from the proposed ROW as a result of this reroute. Residents here would experience ***moderate*** to ***high*** temporary, elevated noise levels associated with construction activities, equipment, and traffic. Impacts from the construction, operation, and maintenance of the proposed transmission line would be the same as described for the North Alternative (***low***).

3.12.3 Environmental Consequences of the South Alternative

Construction of the South Alternative would generate noise similar to the North Alternative in the vicinity of the project corridor. Noise levels also may periodically increase above ambient levels during operation and maintenance. This noise would have the potential to affect nearby noise sensitive areas, such as residences.

Construction activities would create intermittent noise, limited to the duration of construction. Potential sources of noise would be the same as those listed for the North Alternative.

Construction of the Hooper Springs Substation, access roads, and transmission line structures for the South Alternative would create the same noise impacts from the same sources as described for the North Alternative. Table 3-26 summarizes noise levels produced by typical construction equipment that would likely be used for the South Alternative.

The regulations used as a guideline for assessing noise impacts from daytime construction activities to individuals or residences located in the vicinity of the project corridor of the North Alternative can also be applied to the South Alternative. Construction noise levels in the South Alternative equal to or less than 50 dBA would be a low impact. If construction noise levels exceed 50 dBA, this would be a moderate to high, although temporary impact.

Similar to the North Alternative, the corridor of the South Alternative consists mainly of open range, undeveloped land, and agricultural land with few residences that could be affected by noise from land-based construction activity. There are three residential structures within approximately 500 feet of the ROW that may experience a ***moderate*** to ***high*** temporary, elevated noise levels associated with construction activities, equipment, and traffic.

If helicopters are used for construction of the South Alternative, homes within approximately 1 mile of the helicopters would be exposed to temporary noise levels above 65 dBA, as with the North Alternative. Helicopter noise would result in a ***moderate*** to ***high*** impact that would be limited to a short duration.

Blasting, if used for the construction of the South Alternative, would occur in a manner similar to that described for the North Alternative. Blasting would result in a temporary ***moderate* to *high*** impact.

Maintenance noise associated with the South Alternative would be generated from the same sources and create the same impacts as those described for the North Alternative. The noise impacts from maintenance would typically be ***low*** due to the short duration and infrequent occurrence of these activities. Noise associated with the operation of the South Alternative would be the same as the North Alternative (***low***).

At the proposed Hooper Springs Substation site, noise from substation equipment (primarily transformers) and nearby transmission lines would be the primary long-term source of noise. The Hooper Springs Substation would be separated from areas of residential development to the east by Threemile Knoll, a ridgeline that would further buffer any noise impacts associated with both construction and operation of the substation. Long-term noise impacts from the operation of the proposed substation would be ***low.***

South Alternative Route Options

<u>Options 1 through 4</u>

Options 1, 2, 3, and 4 would cross areas similar to the rest of the area crossed by the South Alternative. Helicopter use and blasting would yield the same temporary, elevated noise levels as the South Alternative (***moderate*** to ***high*** impact). Impacts from the construction, operation, and maintenance of these proposed transmission line routing options would be the same as described for the South Alternative (***low***).

3.12.4 Mitigation

The following mitigation measures have been identified to reduce or eliminate noise impacts from the Project.

- Provide a schedule of construction activities, including blasting, to all landowners who could be affected by construction.
- Ensure that all equipment has standard sound-control devices.
- Use blasting mats to reduce noise levels.
- Conduct noise-generating construction activities only during normal daytime hours, i.e., between 7:00 a.m. and 7:00 p.m., to the extent possible.

- Schedule heavy and over-sized truck trips outside of peak morning and evening commute hours (see Section 3.11.4, Transportation).

3.12.5 Unavoidable Impacts Remaining after Mitigation

Potential unavoidable noise impacts would include short-term increases in sound levels experienced by area residents up to 0.5 mile from construction activities during construction of the North and South alternatives. Some corona noise may also be heard along the line, especially in wet or foggy weather. Substation operations would create long-term noise impacts that are expected to be minimal due to BPA design criteria.

3.12.6 No Action Alternative

Under the No Action Alternative, the Project would not be built, so existing background noise levels in the project area would continue without the influence of the transmission lines.

3.13 Public Health and Safety

3.13.1 Affected Environment

A variety of existing sources in everyday life can pose public health and safety issues. This section provides affected environment information concerning two sources with a potential nexus to the North and South alternatives: electric and magnetic fields (EMF) (due to the potential for the Project to contribute to these fields) and hazardous waste and contamination (due to their current presence in the project area).

Electric and Magnetic Fields

All electric devices produce EMF. Current, the flow of electric charge in a wire, produces the magnetic field. Voltage, the force that drives the current, is the source of the electric field. The strength of EMF depends on the design of an electrical line and distance from it. EMF is found around any electrical wiring, including household wiring, electrical appliances, and equipment.

Electric fields are measured in volts per meter (V/m) or kilovolts per meter (kV/m). In a home, the average electric field strength from wiring and appliances is typically less than 0.01 kV/m. Electric field levels in public buildings such as shops, offices, and malls are comparable with residential levels. Outdoor electric fields in publicly accessible places can vary widely from less than 0.01 kV/m to 12.0 kV/m; the higher fields are present only in limited areas along high-voltage transmission line ROWs (see Appendix H). Electric field strength is reduced by intervening objects such as walls and vegetation.

The International Committee on Electromagnetic Safety (ICES) has established public exposure guidelines of 5.0 kV/m for electric fields, except on power line ROWs where the limit is 10.0 kV/m. However, there are no national guidelines or standards for electric fields from transmission lines, and the state of Idaho has no electric field limit. BPA has guidelines for its transmission lines and designs new transmission lines to meet its electric-field guideline of 9.0 kV/m maximum on the ROW, 5.0 kV/m maximum at the edge of the ROW, 5.0 kV/m for road crossings, and 2.5 to 3.5 kV/m in parking lots.

Magnetic fields are measured in units of gauss (G) or milligauss (mG). Average magnetic field strength in most homes (away from electrical appliances and wiring) is typically less than 2.0 mG. However, appliances carrying high current or with high-torque motors, such as microwave ovens, vacuum cleaners, or hair dryers, may generate fields of tens or hundreds of mG directly around them (see Table 3-28). Office workers operating electric equipment and machine workers are exposed to similar or higher magnetic fields. Outdoor magnetic fields in publicly accessible places can range from less than a few mG to 300.0 mG or more, depending on proximity to power lines and the power line voltage (see Appendix H).

Table 3-28. Typical Magnetic Field Levels

Appliance[1]	Magnetic Field Range (mG)[1,2]
Can Opener	40–300
Vacuum Cleaner	20–200
Microwave Oven	1–200
Hairdryer	0.1–70
Power Drill	20–40
Television	0–20
Computer Monitor	2–6

Source: NIEHS and National Institute of Health 2002

1 Applies to plug-in devices.

2 At a distance of 1 foot.

Like electric fields, magnetic fields fall off with distance from the source. Unlike electric fields, however, magnetic field strength is not reduced by intervening objects such as walls. Consequently, while appliances can produce the highest localized magnetic fields, power lines serving neighborhoods and distribution lines and transformers serving individual homes or businesses can be a common source of longer-term magnetic field exposure.

There are no national guidelines or standards for magnetic fields, and Idaho and BPA do not have magnetic field limits for transmission lines. Guidelines that do exist for public and occupational magnetic field exposures are based on demonstrated responses to short-term exposures and include appropriate safety factors. For example, ICES has established public exposure guidelines of 9,040.0 mG for magnetic fields (ICES 2002). Some studies have been conducted on longer-term exposure, but have been inconclusive (see Appendix I).

Hazardous Waste and Contamination

Southeast Idaho has been a major phosphate-producing region since the mid-20th century (Petrun 1999). Phosphate mining near Soda Springs has left behind disposal sites from which selenium and other contaminants including heavy metals have been released. Past studies, including mining company investigations, area-wide investigations, have identified these disposal sites as sources of contamination that may pose a risk to human health and the environment (IDEQ 2004). These contaminants are known or suspected to be present in groundwater, surface water, sediment, soils, and plants within the mining areas and may be transported beyond the mining areas.

The Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended (CERCLA), 42 U.S.C. Section 9601 et seq, is a statutory scheme for addressing sites with significant hazardous waste contamination that threaten human health and the environment. It is especially useful where the contamination is significant and there are several owners or operators who are potentially liable (see Section 4.13.6 for more information on CERCLA). The statutory scheme imposes joint and several liability and may increase BPA's environmental liability risk if it locates its transmission facilities in the phosphate mining areas because BPA may become an owner or operator or BPA construction and operational activities may disturb contamination in the area.

Sites with known and potential contamination located near the North Alternative and South Alternative corridors were researched by reviewing federal and state environmental databases (EPA 2011a and Southeast Idaho Selenium Information Center 2011). There is one existing Superfund site (the Henry Mine) located within 1 mile of the North Alternative corridor. There are four mining areas in the vicinity of the South Alternative corridor that are currently undergoing investigation as potential Superfund sites under CERCLA. This section describes these sites and existing hazardous waste and contamination issues associated with them, and also provides information about two other mines located in the project area (see Map 3-5 in Section 3.1, Land Use, for the location of mining areas near the project corridors).

Henry Mine

The Henry Mine, operated by the Monsanto Company (now known as P4 Production, LLC) from 1969 to 1989, is located 1 mile southeast of the town of Henry, Idaho, and approximately 3,500 feet (0.7 mile) east of the North Alternative corridor (see Map 3-5). The footprint of the mining disturbance is about 5 miles long and 0.5 mile wide. The site comprises five mine pits, waste rock dumps, haul roads, and sedimentation ponds (MWH Americas, Inc. 2004). The site was reclaimed by backfilling most of the pits, and grading, shaping, and revegetating disturbed areas (EPA 2010a).

In 2009, the Henry Mine was designated as a Superfund site. This site is currently under review to determine the nature and extent of contamination. P4 Production, LLC is under an EPA Agreed Order for a remedial investigation and feasibility study of the Henry Mine and two other mine sites (Ballard Mine and Enoch Mine). The contaminants of potential concern (COPC) for soil, groundwater, surface water, and sediment at the Henry Mine include one or more of the following: cadmium, chromium, copper, molybdenum, nickel, selenium (the contaminant known to be released and considered of most concern), vanadium, zinc, and uranium.

The summary below of contamination at the Henry Mine Superfund Site contains information obtained from the 2011 Ballard, Henry, and Enoch Mines Final Remedial Investigation and Feasibility Study Work Plan by MWH Americas, Inc. (MWH Americas, Inc. 2011). Three factors related to hazardous materials presence—soils; surface water and sediment, and groundwater—are discussed.

Soil

Surface soil characterization at the Henry Mine has been performed for upland and riparian soils during several investigations by MWH Americas, Inc. since 2004. These investigations determined that there are isolated areas in the mine dumps with concentrations of cadmium, manganese, and vanadium greater than 2009 EPA regional screening levels. In addition, selenium concentrations have been detected greater than background concentrations, but less than EPA screening levels, primarily on the mine waste dumps and a haul road. Studies also indicated that total uranium concentrations do not exceed screening levels based on chemical risks; however, radiogenic risks may be present but that data has not yet been collected. Finally, arsenic and manganese concentrations were detected at concentrations greater than EPA screening levels.

Surface Water and Sediment

Surface water monitoring has occurred primarily in the spring and the fall at the Henry Mine area since 1997 with 31 stations used to evaluate potential impacts on surface water and sediment. Monitoring of selenium and other substances has detected concentrations at downstream locations that are generally less than EPA surface water screening levels and preliminary background levels. For example, selenium has been detected at concentrations less than the EPA screening level in sediment samples collected from the Little Blackfoot River. However, compounds of potential concern that were detected in the sediment of the Little Blackfoot River at concentrations greater than the EPA screening level, but less than preliminary background concentrations, include cadmium, chromium, nickel, vanadium, and zinc.

Dump seeps, springs, and ponds located at the mine exhibited a greater number of monitored substances in surface water at concentrations greater than the applicable EPA screening levels compared to downstream locations.

Groundwater

Groundwater flow direction in alluvial groundwater systems generally follow topography and are closely related to stream discharges. Based on topography, alluvial groundwater from the western portion of the Henry Mine likely flows westerly toward the North Alternative corridor. According to the Remedial Investigation and Feasibility Study Work Plan (MHA Americas, Inc. 2011), groundwater flow from the pits and waste dumps at the Henry Mine tend to flow toward the northeast, away from the North Alternative corridor.

Between 2007 and 2009, groundwater monitoring occurred at the Henry Mine at 16 wells. The monitoring at the well located in the vicinity of the North Alternative corridor detected concentrations of compounds of potential concern in groundwater, but the samples did not exceed EPA screening levels. Groundwater exceedances of the EPA screening level were only detected in wells located adjacent to waste rock within the mine boundaries.

Conda/Woodall Mountain Mine

The Conda/Woodall Mountain Mine, operated by Simplot from 1960 until its closure in 1984, is located within a portion of the South Alternative corridor just east of the Hooper Springs Substation site (IDEQ 2010b; Newfields 2008) (see Map 3-5). Mining operations disturbed approximately 1,700 acres of land, of which approximately 580 acres of the disturbed lands have been reclaimed (Newfields 2008). A majority of the disturbance occurred on Simplot-owned property with a smaller amount of activities occurring on privately-owned lands and BLM lands (Newfields 2008, IDEQ 2010b; Causey and Moyle 2001).

The Conda/Woodall Mountain Mine is currently undergoing investigation as a potential Superfund site under CERCLA. Simplot entered into a Consent Order/Administrative Order of Consent in 2008 with Idaho Department of Environmental Quality (IDEQ), U.S. Department of the Interior, and BLM to investigate contamination originating from the mining activities (IDEQ no date). Under the order, Simplot will conduct a remedial investigation (RI) through the development of a baseline risk assessment for the Conda/Woodall Mountain Mine, which will assess contamination from past mining activities and determine any resultant threats from these actions to environmental and human health. If, as a result of the RI, it is determined that the mine poses an unacceptable risk, then Simplot would identify potential clean-up alternatives in a Feasibility Study (FS). The RI/FS work plan was finalized in 2008 and the RI/FS is anticipated to be completed in 2013 (Newfields 2008, IDEQ 2011c).

The South Alternative corridor crosses approximately 3,500 linear feet of the Conda site (i.e. lands where contaminate source areas may be located). This portion of the South Alternative corridor crosses the 'New Tailings Pond' and abuts approximately 1,100 feet of an overburden (rock or soil removed during excavation) disposal area associated with the 'Old Tailings Pond'. The approximate 125-acre Old Tailings Pond was constructed for tailings disposal (Newfields 2008). The area is currently sparsely vegetated with shrubs and grasses. The approximately 138-acre New Tailings Pond was constructed in 1979 to replace the Old Tailings Pond. The New Tailings Pond is currently used as a water reservoir. Both the Old and New Tailings Ponds have been identified as potential contaminant source areas.

The remainder of the South Alternative corridor is located over 3,000 linear feet from the Conda site boundary, but this portion of the corridor does cross approximately 5 miles of the Conda/Woodall Mountain Mine study area. The study area consists of lands located outside of the mine boundaries to which contaminants of potential concern (COPCs) may have been transported by pathways such as surface water or groundwater flow (Newfields 2008).

The COPCs for soil, groundwater, surface water, and sediment at the Conda/Woodall Mountain Mine have been identified as cadmium, chromium, nickel, selenium, vanadium, zinc, and uranium (Newfields 2008). Preliminary characterization of COPCs at the site has focused on selenium as the indicator to conservatively delineate the release and extent of site COPC contamination. The following is BPA's summary of the site sampling results that were reported in the site's 2008 RI/FS work plan (Newfield 2008) and the 2009 data summary report (Formation Environmental 2010).

Soil

Surface and subsurface soil characterization at the Conda/Woodall Mountain Mine has been conducted during several investigations since 2003. Soil samples were taken from within the mine disturbance area and in the study area east of the mine footprint. Generally, sampling found that the overburden disposal areas (ODAs), compared to tailing ponds and waste-rock piles, contained the greatest selenium concentrations (Formation Environmental 2010). The average selenium concentration measured at 10 sampling locations in the Old Tailings Pond exceeded screening levels. Other constituents that exceeded screening levels in the Old Tailings Pond soils, included antimony, barium, cadmium, chromium, uranium, vanadium, and zinc (Newfields 2008). A subsurface and surface soil sample collected at the New Tailings Pond did not have selenium concentrations that exceeded screening levels. No additional soil samples have been collected at the New Tailings Pond (Formation Environmental 2010). The western portion of the study area, near the South Alternative crossing, was not sampled for soil contamination.

Surface water and sediment

Within the Conda site boundaries, the South Alternative corridor crosses the French Drain Subbasin and abuts the Old Tailings Pond Subbasin (Newfield 2008). The South Alternative corridor also crosses the Western Woodall Mountain Subbasin within the mine's study area. Surface water samples from small seasonal pools were collected between 2003 and 2009 in the Old Tailings Pond Subbasin. Selenium concentrations in the seasonal ponds exceeded water quality screening levels. The average water selenium concentration in the New Tailings Pond was below the screening levels, though sediment selenium concentrations exceeded thresholds (Formation Environmental 2010, Newfield 2008).

Review of topographic, aerial, and RI/FS work plan mapping indicates that the South Alternative corridor crosses Woodall Mountain Creek #6, which is an intermittent waterbody that drains from Woodall Mountain. Within the Conda study area, the South Alternative corridor crosses Woodall Mountain Creeks #1, #2, #3, #4, and #5 (Newfield 2008). All of these Woodall Mountain waterbodies were dry during snowmelt sampling events during 2003, 2004, 2007, and 2008 (Formation Environmental 2010). Sediment samples in Woodall Mountain Waterbody #6 exceeded the screening level benchmark. Sediment samples in Woodall Mountain Creeks exceeded the screening level benchmark in some locations, but sediment data showed that the average selenium concentrations within the drainages decreased with distance from the ODAs.

Groundwater

Groundwater at the Conda site occurs in the shallow, unconsolidated sediments and in deeper, consolidated bedrock. Groundwater data are available for four wells and one spring in the Western Woodall Subbasin. Sampling found selenium and other COPC levels below the federal drinking water standard (Newfield 2008, Formation Environmental 2010). 2009 sampling of unconsolidated groundwater formations in the Old Tailings Pond Subbasin found that total selenium and multiple other COPCs (arsenic, cadmium, chromium, lead, nickel, uranium, and vanadium) exceeded the federal drinking water standard (Formation Environmental 2010). One of the two consolidated groundwater formations was found to have COPCs (selenium and arsenic) that exceeded the federal drinking water standard. Sampling of unconsolidated groundwater formations in the French Drain Subbasin found selenium exceeding federal drinking water standard concentrations at one groundwater well, while a different well exceeded arsenic, cadmium, chromium, and lead drinking water standards (Formation 2010). In consolidated deposits, cadmium, arsenic, selenium, and vanadium concentrations exceeded federal drinking water standards.

<u>Ballard Mine</u>

In addition to the Henry Mine, P4 Production, LLC also owns the Ballard Mine. The southwestern boundary of the Ballard Mine is about 1,300 feet northeast of the South Alternative corridor (see Map 3-5). This mine is located on private, state, and BLM lands and is comprised of six open mine pits (191 acres), six waste rock dumps (317 acres), various sedimentation ponds, haul roads, shop building, and other facilities (96 acres). The portion of the Ballard Mine nearest to the South Alternative corridor is identified as a waste rock dump location.

The Ballard Mine is currently undergoing investigation as a potential Superfund site under CERCLA. P4 Production, LLC is under an EPA Agreed Order for a RI/FS of the Ballard Mine, as well as two other mine sites (Henry Mine and Enoch Mine). Site specific investigation sampling activities have occurred in the area since 1998 (MWS 2011). The COPCs for soil, groundwater, surface water, and sediment at the Ballard Mine include one or more of the following: cadmium, chromium, copper, molybdenum, nickel, selenium, vanadium, zinc, and uranium. The following is BPA's summary of information obtained from the Ballard Mine 2011 Final RI/FS Work Plan.

Soil

Upland and riparian surface soils have been characterized for the Ballard Mine during several investigations since 2004. The soil samples were collected throughout the site and extended to some locations outside of the site boundaries, such as along the Monsanto Haul Road. Sampling found isolated areas with elevated concentrations of cadmium, cobalt, nickel, manganese, and vanadium. Arsenic concentrations exceeded screening levels primarily at mine waste dumps, mine pit areas, and the haul road. Selenium concentrations were found below the screening level, but at levels that exceeded background levels at mine waste dumps, pit areas, and the haul road.

Surface water and sediment

The Ballard Mine is located within three major drainages: Long Valley Creek, Wooley Valley Creek, and the Blackfoot River (MWS 2011). Several intermittent waterbodies originate from or cross the Ballard Mine and are tributaries to the Blackfoot River, located south of the mine. The South Alternative corridor does not cross the intermittent waterbodies draining the mine.

Surface water monitoring has occurred primarily in the spring and fall since 1997. Selenium, as well as other COPCs such as cadmium, nickel, zinc, and vanadium, periodically exceeds screening criteria in surface waterbodies around the Ballard Mine. Mine waste dump seeps, springs, and ponds contained a greater number of constituents elevated above screening levels compared to streams. Total selenium concentrations in surface waters were generally higher than background levels and often exceeded the IDEQ standard in seeps, springs and ponds within the site, as well as at a few downstream locations. Sediment data identified isolated instances of screening level exceedances for vanadium and frequent screening level exceedances for cadmium, chromium, nickel, and selenium in seeps, springs, ponds, and downstream locations.

Groundwater

Groundwater monitoring occurred primarily between 2007 and 2009 (MWS 2011). Isolated monitoring wells reported concentrations of arsenic and cadmium in groundwater above screening levels. Selenium, sulfate, and total dissolved solids also exceeded their groundwater screening levels in several monitoring wells. The monitoring wells with elevated concentrations were located in the interior of the mine, while monitoring wells on the perimeter of the mine have selenium concentrations in groundwater below screening levels. On the east side of the mine, impacted alluvial groundwater is associated with two waste rock dumps and has resulted in three distinct plumes with elevated concentrations of contaminants. On the west side of the mine, impacted alluvial groundwater is associated with two waste rock dumps and has resulted in two distinct plumes.

Wooley Valley Mine

Rhodia, Inc. is the current lease holder of the Wooley Valley Mine (USGS 2001). The South Alternative corridor crosses approximately 160 feet of the southern portion of the Wooley Valley Mine on BLM land in an area that was used as a rock waste dump (see Map 3-5). The total disturbance footprint associated with mining activities total approximately 808 acres with the majority (approximately 75 percent) of the mine site located on USFS lands with smaller portions on private (20 percent) and BLM (5 percent) lands.

The Wooley Valley Mine is currently undergoing investigation as a potential Superfund site under CERCLA. The USFS has conducted a Preliminary Assessment (PA) for the portions of the Wooley Valley Mine that are located within the CNF (USFS 2000). A PA is designed to determine whether a site poses little or no threat to human health and the environment, or if it does pose a threat, whether the threat requires further investigation. In the future, the USFS will extend its authority to the entire Wooley Valley site and will address the entire site in future USFS actions (USFS 2000). As of January 2012, additional site investigation assessments or work plans for the Wooley Valley site have not been developed (personal communication, B. Larson, USFS 2012). In the PA, the USFS identified the following COPCs: selenium, cadmium, zinc, vanadium, and manganese (USFS 2000). Of these COPCs, selenium was identified as having the greatest potential for concern. In 1997 and 1998, investigations were conducted at the site. The following is BPA's summary of the findings for USFS lands as described in the PA.

Soil

Surface soil sampling identified concentrations of selenium, cadmium, manganese, nickel, and vanadium (USFS 2000). No waste rock soil sampling had been conducted for the site at the time of the PA. Waste rock dumps at similar mines in the area suggest that the waste rock dumps in the Wooley Valley Mine would likely contain elevated concentrations of selenium, vanadium, manganese, cadmium, and zinc.

Surface water and sediment

The South Alternative corridor is located between the mine and the Blackfoot River, and crosses a wetland at the southernmost tip of the mine's waste dump. Based on review of topographic and aerial mapping, the wetland feeds an intermittent waterbody, which flows approximately 1,900 feet into the Blackfoot River. This unnamed tributary was identified as a contaminant probable point of entry in the PA (USFS 2000).

Surface water sampling conducted at various locations in the Wooley Valley site during the late 1990s indicated elevated concentrations of selenium from overburden dump seeps, though sampling on the Blackfoot River did not exceed water quality criteria (USFS 2000). Surface sediment samples were similar (within three times of background levels) to selenium concentrations collected in other streams in the area. Selenium concentrations in seep samples and pit ponds exceeded background levels.

Groundwater

At the time of the PA, limited groundwater monitoring data was available. Twelve wells located within a 4-mile-radius of the mine area indicated that selenium concentrations were under federal drinking water standards (USFS 2000).

North Maybe Mine

Lands leased to the Nu-West Mining, Inc. (Nu-West) for the North Maybe Mine (also called the North Maybe Mine Investigation Area) are located primarily on USFS lands, with some mining lands located on BLM and privately held lands (see Map 3-5). The North Maybe Mine has been divided into two operable Units: East Mill Operable Unit, which includes the mine pit and the area east of the pit; and the West Ridge Operable Unit, which is the area west of the mine pit (Ecology and Environment 2011). The South Alternative corridor is located over 1 mile north of the East Mill Operable Unit's East Mill Dump. This corridor crosses approximately 4,800 feet of the East Mill Operable Unit's Investigation Area 1, crossing Mill Canyon Creek down gradient of the East Mill Dump area. The Investigation Area 1 has been delineated as either containing mine-related contamination or as an area where there is a potential for contaminated soil, surface water, groundwater, sediment, or vegetation (Ecology and Environment 2011).

The North Maybe Mine is currently undergoing investigation as a potential Superfund site under CERCLA. The draft final RI/FS Work Plan to address contamination at the East Mill Operable Unit of the North Maybe Mine site was completed in September 2011 (Ecology and Environment 2011). Six COPCs associated with the mine was identified, including cadmium, chromium, nickel, selenium, vanadium, and zinc (Ecology and Environment 2011). Site sampling was performed on behalf of Nu-West during the 2005, 2006, and 2007 field seasons. The following is BPA's summary of the sampling of soil, surface and groundwater, and sediment, as described in the draft final RI/FS Work Plan (Ecology and Environment 2011), are included below.

Soil

Soil sampling has been conducted in the East Mill Operable Unit to characterize waste dump material, determine the effects of surface water transport of East Mill Dump waste, evaluate whether COPCs had eroded off of the East Mill Dump into the upper reaches of Kendall Creek, and to identify riparian soils that may have been contaminated by Mill Canyon Creek or Spring Creek flooding (Ecology and Environment 2011). All six COPCs were detected at concentrations above standards in the majority of samples collected from the East Mill Dump soils and all six COPCs were elevated in surface waste rock soils and in the riparian soils along Mill Canyon Creek, including areas a considerable distance downstream of the waste dump. The majority of the exceedances were at or near the headwaters of Mill Canyon Creek, in the top 2 inches of soil.

Surface water and sediment

Surface water sampling was conducted to assess the possible release of contaminants from waste rock to Mill Canyon Creek, Kendall Creek, Mosquito Creek, and downstream waterbodies; characterize the extent of any such releases; and evaluate seasonal variations in surface water flow and quality (Ecology and Environment 2011). Within Investigation Area 1, sampling during

2005, 2006, and 2007 field seasons occurred at 47 locations, including creek water, springs, and ponds in and along Mill Canyon Creek, North Branch Kendall Creek, South Branch Kendall Creek, and Mosquito Creek. The majority of the sediment samples were collected from identified sediment accumulation areas in Investigation Area 1 downstream of the East Mill Dump.

Selenium, cadmium, and vanadium were detected in the East Mill Operable Unit's surface water samples at concentrations above screening levels. The concentrations of all six COPCs were generally above the removal action levels in all of the upper Mill Canyon Creek sediment samples and the Mine Pit pond sediments. COPC concentrations in Mill Canyon Creek sediment were generally higher in samples from the surface deposits compared to deeper samples. COPC concentrations exceeded screening criteria in almost all of the Mill Creek sediment samples from Investigation Area 8, which is downstream of Investigation Area 1 and the South Alternative corridor. Mill Canyon Creek sediment concentrations decreased downstream and, except for selenium, were below the screening levels in the samples collected from the sediment near the confluence with the Blackfoot River (downstream of the South Alternative corridor). Sediment samples from Spring Creek and the Blackfoot River, near its confluence with Mill Canyon Creek waters, exceeded screening levels for cadmium and selenium.

Groundwater

From 2005 to 2006, monitoring wells were constructed in and near the East Mill Operable Unit (Ecology and Environment 2011). Groundwater sampling was conducted to evaluate shallow and deep aquifer characteristics, determine the potential for groundwater contamination resulting from waste rock, and evaluate seasonal variations in groundwater elevations and quality. In addition to monitoring wells located on the west and south of the mine site, groundwater wells were located near the East mill dump site at the head waters of Mill Canyon Creek and two groundwater sampling wells were located near the mouth of Mill Canyon Creek in investigation area 8, which is down gradient of the South Alternative corridor.

Selenium, cadmium, chromium, and vanadium were detected in East Mill Operable Unit groundwater samples at concentrations above the screening levels. Groundwater sampling at the mouth of Mill Canyon Creek (downstream of the South Alternative corridor) exceeded drinking water screening levels and removal action levels for total and dissolved selenium. Samples from groundwater wells in the Mill Canyon Creek Alluvial Fan (down gradient of the South Alternative corridor) exceeded drinking water screening levels for selenium; however, only the maximum detected selenium concentrations in one well exceeded the drinking federal drinking water standard. None of the other COPCs exceeded their screening levels in any of the samples from the wells.

<u>Blackfoot Bridge Mine</u>

The Blackfoot Bridge Mine, owned by P4 Production, is located within the western portion of the South Alternative corridor north of the Conda/Woodall Mountain Mine (see Map 3-5). Lands leased to P4 for the Blackfoot Bridge Mine are located primarily on BLM lands, with some private lands. The BLM Pocatello Field Office prepared an EIS that analyzed the potential impacts of the proposed mine and reclamation plan for the federal phosphate leases owned by P4 about 10 miles northeast of Soda Springs in Caribou County, Idaho. Idaho Department of Lands also participated as a Cooperating Agency in the preparation of the EIS because of its responsibility for mining and reclamation on non-federal lands within the state of Idaho. BLM signed a Record of Decision in June 2011 allowing implementation of the 2008 Revised Blackfoot Bridge Mine and Reclamation Plan.

P4 is currently operating an open-pit phosphate mine including use of external overburden piles, a haul road, a water management plan, and other provisions to address environmental impacts. Ore processing is being conducted off-site. The phosphate ore is being mined and hauled via truck on an existing haul road approximately 8 miles to P4's Soda Springs elemental phosphorus plant for processing. No processing facilities other than typical crushing and screening operations are occurring on the mine site. All chemical processing activities occur at the Soda Springs plant. The ore mined is expected to be physically and chemically similar to that produced at other P4 mine properties in the area.

Surface disturbance resulting from the Blackfoot Bridge Mine will total about 738.9 acres, including 361.4 acres from pits, 185.8 acres from overburden piles, 86.8 acres from roads and related facilities, 66.9 acres from sediment control structures, and 38 acres from topsoil stockpiles. Reclamation would take place over the life of the mine, with about 674 total acres being reclaimed. The remaining 65 acres would be highwalls and similar areas with steep slopes where it would be impractical to place soil or revegetate and would not be reclaimed.

Husky-North Dry Ridge Mine

The proposed Husky-North Dry Ridge Mine, owned by Nu-West, is located within a portion of the South Alternative corridor near the eastern end of the corridor (see Map 3-5). Lands leased to Nu-West for the Husky-North Dry Ridge Mine are USFS lands, with some state of Idaho and private lands. Nu-West has proposed to construct, operate, and reclaim an open-pit phosphate mine, with associated facilities, on the Husky 1, North Dry Ridge, and Maybe Canyon federal phosphate leases. The total proposed new disturbance is approximately 1,051 acres. Most of the disturbance would take place on C-TNF lands, and the remainder, about 10 acres, would take place on private lands. No disturbance would take place on state of Idaho lands. The proposal includes enlargements to both the Husky 1 and North Dry Ridge lease and includes a request for special use permits to accommodate off-lease disturbance on C-TNF lands.

The BLM Pocatello Field Office and C-TNF, in cooperation with IDEQ, are jointly preparing an EIS to analyze the potential impacts of a proposed mine and reclamation plan for the three federal phosphate leases in the Dry Valley area of Caribou County, Idaho about 19 miles north east of Soda Springs, Idaho.

The proposed Husky 1-North Dry Ridge Phosphate Mine and Reclamation Plan describes Nu-West's plans for open pit mining phosphate ore in two different areas (Husky 1 and North Dry Ridge). These areas are separated by the historically operated, now inactive, North Maybe Mine. Portions of the North Maybe Mine are currently undergoing investigation and remediation under the CERCLA program.

It is anticipated that mining of the North Dry Ridge area would occur for the first 2.6 years, followed by approximately 11 years of mining on the Husky 1 deposit. Overburden (soil and rock overlying the phosphate deposits) must be removed in order to gain access to the phosphate ore. Initially, overburden from North Dry Ridge would be placed in the existing North Maybe Mine pit as backfill, followed by overburden placement in the North Dry Ridge pit as mining progresses and room is made available. Overburden from Husky 1 would be placed in an external waste dump and into the existing South Maybe Canyon southern pit as backfill. As mining progresses through the Husky 1 deposit, overburden would be backfilled into the South Maybe Canyon pits, and backfilled into the Husky 1 pits. Phosphate ore mined from the pits would be transported in trucks via new haul roads to an existing haul road leading to the Maybe Canyon tipple, where it would be loaded onto rail cars for transport to Nu-West's Conda Phosphate Operations Plant in Conda, Idaho.

Nu-West proposes building new facilities to support the project, including a staging area, fuel storage area, dust suppression water wells, storm water retention ponds, haul roads, stockpile areas, and a train load-out facility (tipple). It also proposes to use the existing shop and office facilities at the Dry Valley Mine. The Mine and Reclamation Plan describes concurrent reclamation practices for the project, including backfilling pits as mining progresses, grading slopes, capping overburden disposal areas, re-establishing drainages, surface stabilization, and revegetation.

Approximately 1,051 acres on C-TNF and private lands could be impacted by the mining activities. Potential impacts that would be analyzed in the EIS include: impacts on groundwater and surface water quality from dissolved selenium and other metals (some of the overburden has naturally high levels of selenium); changes to groundwater and surface water quantity; uptake of contaminants by vegetation; loss of soil resources; changes to air quality; loss of wildlife (and fisheries) and their habitats; displacement of livestock grazing; impacts on wetlands; reduced opportunity for recreation; impacts on roadless areas; changes in socioeconomics such as employment; reduced opportunity to implement Native American rights, treaties, and land uses; and changes to visual resources.

3.13.2 Environmental Consequences of the North Alternative

Electric and Magnetic Fields

The possible effects of EMF on people near a transmission line ROW fall into two categories: short-term electric field effects that can cause shocks and possible long-term health effects associated with magnetic fields. In addition, transmission lines can cause electromagnetic interference. Each of these impacts is discussed below.

Electric Fields

Power lines, like electrical wiring, can cause serious electric shocks if certain precautions are not taken. All BPA transmission lines are designed and built to meet the NESC. The NESC specifies the minimum allowable distance between conductors and the ground or other objects. These requirements determine the edge of the ROW and the height of the line, that is, the closest point that houses, other buildings, and vehicles are allowed to the line. These clearances are specified to prevent harmful shocks to workers and the public.

BPA does not permit any uses within ROWs that are unsafe or might interfere with constructing, operating, or maintaining the transmission facilities. These restrictions are part of the legal rights BPA acquires for its transmission line easements. However, people working or living near transmission lines must also take certain precautions. For example, it is important never to bring conductive materials – including TV antennas, irrigation pipes or water streams from an irrigation sprinkler – too close to the conductors. Also, vehicles should not be refueled under or near the conductors.

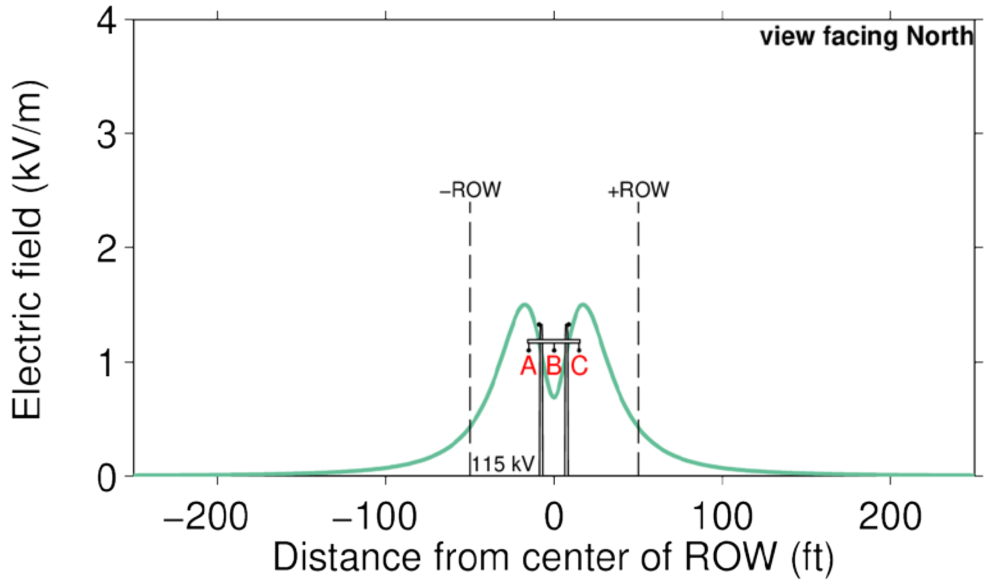
Besides serious shocks, transmission lines can also cause nuisance shocks when a grounded person touches an ungrounded object under or near a line or when an ungrounded person touches a grounded object. BPA takes additional precautions to prevent nuisance shocks. Fences and other metal structures on and near the North Alternative ROW would be grounded during construction. After construction, BPA would respond to any complaints and install or repair grounding as needed. Nuisance shocks from mobile objects that cannot be grounded permanently are minimized by conductor clearance codes and design practices, such as BPA's electric field requirements. BPA would ground stationary objects and implements conductor clearance standards to prevent nuisance shocks, so the impact under the North Alternative would be ***low.***

Shock risks for nearby residents and passers-by would be minimal. Motorists passing near or under the lines would be exposed only briefly to electric fields, which would be required to meet BPA standards at street crossings; therefore, impacts from electric fields at street crossings under the North Alternative would be ***low***.

The electric field analysis for the North Alternative is discussed in more detail in Appendix H. Along the portion of the ROW where H-frame structures are proposed, the highest calculated electric field level would be 1.5 kV/m and would drop to 0.4 kV/m at the edge of the ROW. Along the portion of the North Alternative ROW where steel single-pole structures are proposed, the highest calculated electric field level would be 1.5 kV/m, which would decrease to 0.3 kV/m or less at the edge of the ROW. Figures 3-19 and 3-20 show the electric field profile as a function of distance from the center of the transmission line ROW. Both the maximum and average values expected at the edge of the ROW would be under BPA's guideline of 5.0 kV/m. These electric field levels would be comparable to or less than those from existing transmission lines in the area and elsewhere. Overall, electric field level impacts under the North Alternative would be ***low.***

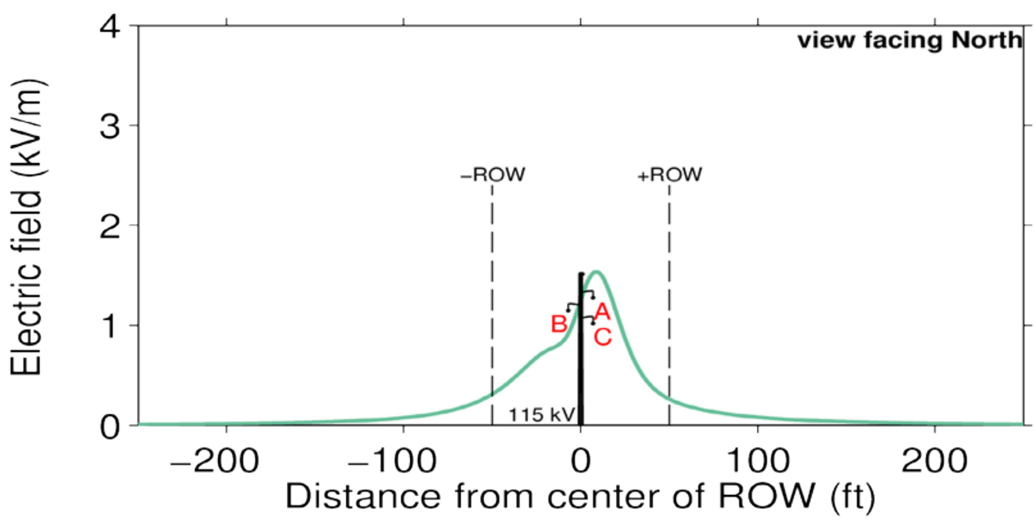
Electric fields would remain essentially the same at Lanes Creek Substation since facilities added to accommodate the North Alternative would not incrementally increase electric fields already present. Electric fields at the perimeter of the proposed Hooper Springs Substation would reflect fields generated by the new 115-kV and 138-kV transmission lines, and would dissipate to ambient levels within a few hundred feet (see Figures 3-19 and 3-20). Since there are no residences near either substation site, there would be ***no*** impact from electric fields at the substations.

Figure 3-19. Electric Fields around H-Frame Configuration for the North Alternative



Source: Appendix H

Figure 3-20. Electric Fields around Steel Single Pole Configuration for the North Alternative



Source: Appendix H

Magnetic Fields

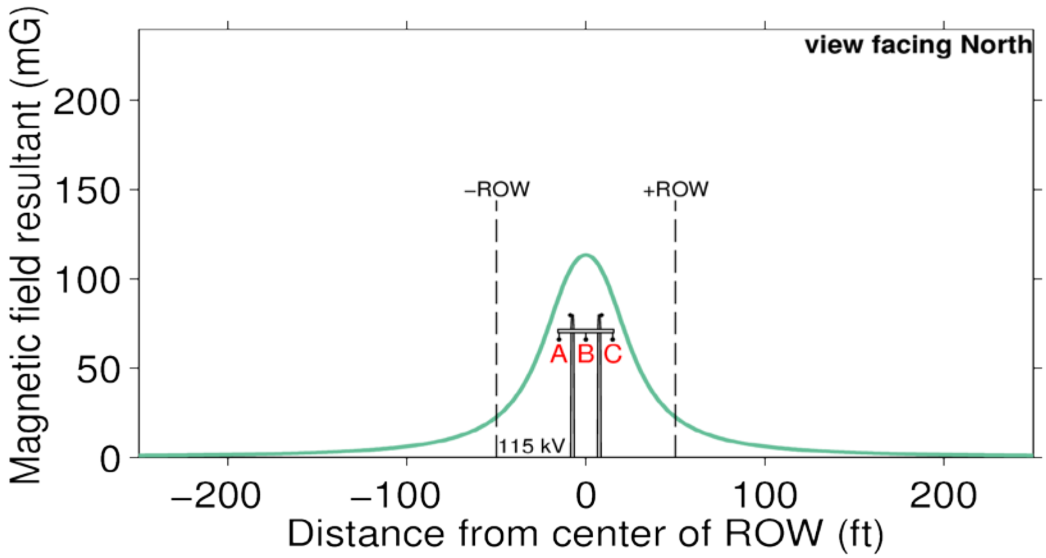
Although there have been decades of research, regarding long-term health effects associated with transmission line fields, results remain inconclusive. Magnetic fields are most in question as possible sources of long-term effects, although studies sometimes lump both electric and magnetic fields together. In recent years, considerable research on the possible biological effects of EMF has been conducted. A review of these studies and their implications for health-related effects is provided in Appendix I.

Scientific reviews of EMF health effects research have found that there is insufficient evidence to conclude that EMF exposures lead to long-term health effects, such as adult cancer, or adverse effects on reproduction, pregnancy, or growth and development of an embryo. However, uncertainties remain about possible links between childhood leukemia and childhood magnetic field exposures at levels greater than 4.0 mG. There are also suggestions that short-term exposures to magnetic fields greater than 16.0 mG may be related to an increased risk of miscarriage. Animal and cellular studies provide little support for the idea that any statistical associations reflect a causal relationship, i.e., that magnetic-field exposure increases the risk of childhood cancer or miscarriage.

An increase in public exposure to magnetic fields could occur if the Project results in field level increases and if residences or other structures draw people to these areas. The predicted field levels discussed in this section are only indicators of how the North Alternative may affect the magnetic-field environment. They are not measures of risk or impacts on health.

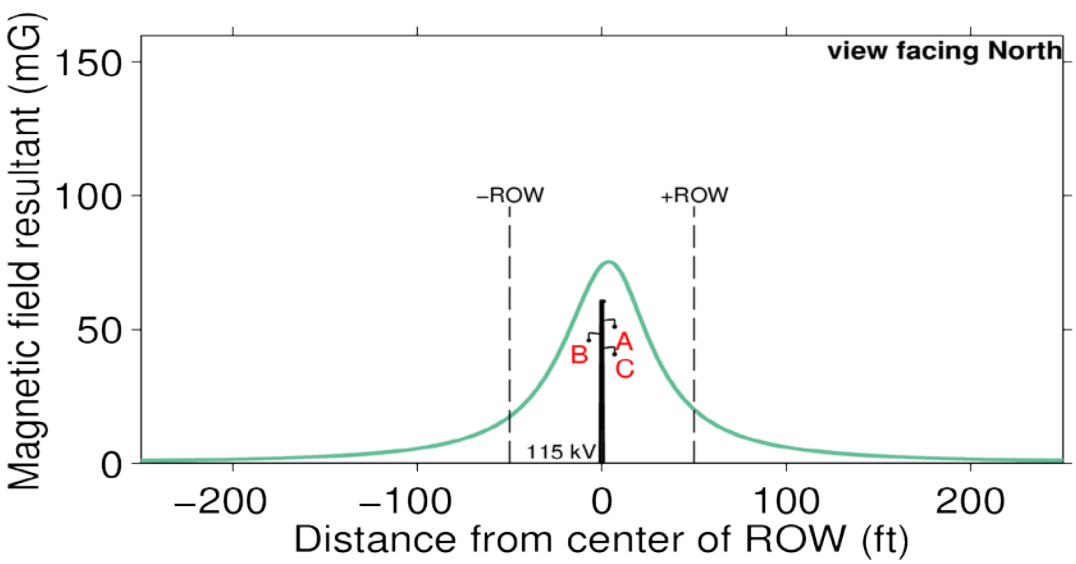
Along the portion of the North Alternative ROW where H-frame structures are proposed the highest average magnetic field level would be 113.5 mG and drops to 22.7 mG at the edge of the ROW. Peak field values for H-frame structures range from 231.8 to 46.3 mG. Along the portion of the North Alternative ROW where the steel single pole structures are proposed, the highest average magnetic field level would be 75.3 mG decreasing to 20.2 mG or lower at the edge of the ROW. Peak field values for steel single pole structures would range from 153.8 to 41.3 mG. Maximum magnetic fields would occur on the ROW under power lines where conductors are closest to the ground, and decrease from the edge of the ROW. Figure 3-21 and 3-22 show the magnetic field profile as a function of distance from the center of the transmission line ROW for each structure type. Actual day-to-day magnetic field levels would be lower. They would vary as currents change daily and seasonally and as clearances change with ambient temperature.

Figure 3-21. Magnetic Fields for H-Frame Configuration for the North Alternative



Source: Appendix H

Figure 3-22. Magnetic Fields for Single Steel Pole Configuration for the North Alternative



Source: Appendix H

Beyond the edge of ROW, magnetic fields fall off rapidly. For example, at a distance of 150 feet from centerline, both H-Frame and single pole steel structure transmission lines with maximum current would produce a peak field of 5.7 mG and average field of about 2.8 mG. Beyond a few hundred feet, the transmission line magnetic fields would approach common indoor ambient levels. Given these low levels, the lack of residences near the proposed ROW, and the very short-term nature of expected visitor presence near the proposed ROW, the potential for impacts associated with elevated magnetic fields under the North Alternative would be ***low***.

Magnetic fields would remain unchanged at the Lanes Creek Substation. Beyond the perimeter of the substation yard, magnetic fields would continue to be determined by fields from transmission lines entering the substation. The addition of a new 115-kV line would not incrementally increase fields. Magnetic fields at the perimeter of the proposed Hooper Springs Substation would reflect fields generated by the new 115-kV and 138-kV transmission lines, and would dissipate to ambient levels within a few hundred feet. Since there are no residences near either substation site, there would be ***no*** impact from electric fields at the substations. Motorists passing near or under the line would be exposed only briefly to magnetic fields, which would be required to meet BPA standards at street crossings.

Electromagnetic Interference

If corona is present at the surface of transmission line conductors, it can sometimes cause interference with broadcast radio and television signals close to the North Alternative ROW. This affects only conventional broadcast radio and television receivers operating at lower frequencies (AM radio and TV channels 2 to 6). Satellite and cable TV systems are not affected, nor are FM radio signals. If complaints arise, measures would be taken under BPA's mitigation program to restore reception to the same or better quality.

Magnetic fields from transmission facilities can also interfere with other electronic equipment, such as distorting images on older TVs and computer monitors with cathode ray tubes. While unlikely to occur at the magnetic field levels found near the North Alternative, such interference is easily remedied by shielding the affected device or moving it to another location. Contemporary display devices using flatpanel technologies, such as liquid-crystal or plasma displays, are not affected. The North Alternative is not anticipated to create electromagnetic interference in nearby homes. Therefore, electromagnetic interference impacts would be ***low***.

Hazardous Waste and Contamination

One Superfund site, the Henry Mine, would be located approximatley 0.7 mile from the North Alternative The North Alternative would not come into direct contact with waste dumps, seeps, or mine pits. The North Alternative's crossing of the Little Blackfoot River downgradient of the Henry mining area could result in the potential disturbance of contaminated soils or sediment that have washed downstream from the site. The May 2011 Remedial Investigation and Feasibility Study detected concentrations of compounds of potential concern in groundwater from a well near the alignment, though concentrations did not exceed EPA screening levels. In addition, data from sampling locations in the Little Blackfoot River downstream of the mine indicate that selenium has been detected in surface water at concentrations less than the EPA screening level. No transmission line structures would be placed within 100 feet of the Little

Blackfoot River and no access roads crossing the river would be constructed or improved. In the event that unknown or undetected contaminants have traveled downgradient from the Henry Mine along the Little Blackfoot River, project disturbance of contaminated sediments and water would not be likely due to the proposed construction distance from the river. Because the North Alternative would not result in ground disturbance near the mine footprint or within close proximity of the Little Blackfoot River, the risk of releasing contaminates associated with the Henry Mine would be ***low***.

It is possible that unknown contaminated sites could be discovered during project construction, particularly in agricultural lands crossed by the project corridor due to the off-site migration of pollutants, unauthorized dumping, and historic unreported hazardous materials spills. If other contaminants are mobilized by soil disturbing activities for the North Alternative (such as access road construction or structure installation), workers, the general public, and environmental features may become contaminated or exposed to toxic substances. Hazardous materials encountered in the construction area would require special handling to prevent releases. Contaminated soil and groundwater, if encountered, also may qualify as hazardous waste and would require handling and disposal according to applicable local, state, and federal regulations.

Further, hazardous materials, such as vehicle fuels, oil, hydraulic fluid, and other vehicle maintenance fluids would be used and stored in project work areas during construction. Gasoline, diesel fuel, oil, hydraulic fluid, lubricants, paints, solvents, adhesives, and cleaning chemicals used in construction activities, equipment, and vehicles could be released during construction as a result of accidents and/or leaking equipment or vehicles. Spills and leaks of hazardous materials during construction activities could also result in soil or groundwater contamination. Mitigation measures, described in Section 3.13.4, Mitigation, would be implemented to manage unanticipated hazardous materials and spills. As a result, impacts associated with unknown contaminates or the unintended release of construction-related hazardous materials would be ***no*** to ***low***.

None of the North Alternative's operation and maintenance activities would result in the release or exposure of hazardous materials related to current mining activities. As the North Alternative would not cross existing mineral lease blocks, future mine development would not result in the release of mining contaminants from future ground disturbing operation and maintenance activities. Therefore, there would be ***no*** to ***low*** impacts from contamination releases.

North Alternative Route Options

<u>Long Valley Road Option</u>

As the Long Valley Road Option would use steel single-pole structures in the same configuration discussed above, similar ***low*** EMF levels would be generated (see Figures 3-19 and 3-20).

Under the Long Valley Road Option, construction would not occur in any active mines and the route option would not cross any undeveloped mineral lease blocks. The transmission line would still be located downgradient of the Henry Mine and cross the Little Blackfoot River. While the route option would cross the Little Blackfoot River approximately 830 feet closer to the mine, the transmission line would span the river and structures or access roads would not result in soil disturbance within 100 feet of the river. Therefore, there would be a ***low*** likelihood of mobilizing contaminated sediment from mining activities. Mitigation measures, described in Section 3.13.4, Mitigation, would be implemented to manage unanticipated hazardous materials and spills, which would result in a ***no*** to ***low*** impact.

North Highland Option

The North Highland Option would use wood H-frame structures in the same configuration discussed above; therefore, similar low electric and magnetic field levels would be generated (see Figures 3-21 and 3-22).

The North Highland Option would not be constructed in any active mine areas, cross any undeveloped mineral lease blocks, or cross any waterbodies downgradient of any mine areas. Therefore, there would be a low likelihood of mobilizing contaminated sediment from mining activities. Mitigation measures, described in Section 3.13.4, would be implemented to manage unanticipated hazardous materials and spills, which would result in a ***no*** to ***low*** impact.

3.13.3 Environmental Consequences of the South Alternative

Electric and Magnetic Fields

The possible effects of EMF near the South Alternative ROW would be the same as under the North Alternative: short-term electric field effects that can cause shocks and possible long-term health effects associated with magnetic fields plus possible electromagnetic interference.

Electric Fields

As under the North Alternative, any uses within ROWs that are unsafe or might interfere with constructing, operating, or maintaining the transmission facilities would not be permitted under the South Alternative. Similar to the North Alternative, precautions to prevent nuisance shocks also would be implemented under the South Alternative, including grounding fences and other metal structures on and near the ROW during construction. After construction, BPA would respond to any complaints and install or repair grounding as needed. As under the North Alternative, because BPA would ground stationary objects and implement conductor clearance standards, the impact under the South Alternative from nuisance shocks would be ***low.*** Shock risks for nearby residents and passers-by also would be minimal. As with the North Alternative, motorists passing near or under the lines would be exposed only briefly to electric fields, which would be required to meet BPA standards at street crossings; therefore, impacts from electric fields under the South Alternative at street crossings would be ***low***.

Along the South Alternative ROW, the highest calculated electric field level would be 2.2 kV/m dropping to 0.08-0.13 kV/m at the edge of the ROW. Both values would be under BPA's guideline of 5.0 kV/m at the edge of the ROW. As with the North Alternative, electric field level impacts under the South Alternative would be ***low.***

Electric fields at the perimeter of the proposed Hooper Springs Substation for the South Alternative would be the same as those under the North Alternative. Because there are no residences near the Hooper Springs Substation, there would be ***no*** impact from electric fields.

Magnetic Fields

A review of possible biological effects of EMF and their implications for health-related effects is provided in Appendix I. As with the North Alternative, an increase in public exposure to magnetic fields could occur if the South Alternative results in field level increases and if residences or other structures draw people to these areas. The predicted field levels discussed in this section are only indicators of how the South Alternative may affect the magnetic-field environment. They are not measures of risk or impacts on health.

Along the South Alternative ROW, the highest average magnetic field level would be 31.5 mG which would drop to 8 to 10 mG at the edge of the ROW.

As with the North Alternative, magnetic fields fall off rapidly beyond the edge of ROW. For example, at a distance of 200 feet from centerline, the peak field would be 0.9 mG. Beyond a few hundred feet, the transmission line magnetic fields would approach common indoor ambient levels. As with the North Alternative, because of the lack of residences near the South Alternative ROW, low magnetic field levels, and the very short-term nature of expected visitor presence, the potential for impacts associated with elevated magnetic fields would be ***low***.

Magnetic fields at the perimeter of the proposed Hooper Springs Substation under the South Alternative would be the same as the North Alternative. Since there are no residences near the substation site, there would be ***no*** impact from electric fields.

Electromagnetic Interference

If corona is present at the surface of transmission line conductors, it can sometimes cause interference with broadcast radio and television signals close to the South Alternative ROW as with the North Alternative. If complaints arise, measures would be taken under BPA's mitigation program to restore reception to the same or better quality. As with the North Alternative, the South Alternative is not anticipated to create electromagnetic interference in nearby homes. Therefore, electromagnetic interference impacts under the South Alternative also would be ***low***.

Hazardous Waste and Contamination

Four mines crossed by the South Alternative corridor including the Conda/Woodall Mountain, Ballard, Wooley Valley, and North Maybe mines are currently undergoing investigation as potential Superfund sites under CERCLA. While the transmission line and access roads would be designed to avoid areas of contamination, construction activities could come into direct contact with waste dumps, seeps, or mine pits. If contaminants are disturbed, impacts on workers, the general public, and environmental features could be ***moderate*** to ***high***. As with the North Alternative, soil sampling as described in Section 3.13.4 would reduce the potential for disturbance of contaminants by construction. It is unknown if contaminants are present at the Blackfoot Bridge and Husky-North Dry Ridge mines.

It is possible that unknown contaminated sites could be discovered during construction of the South Alternative, in mining and other areas crossed by the corridor due to possible on-site contamination, off-site migration of pollutants, unauthorized dumping, and historic unreported hazardous materials spills. Similar to the contamination release discussion above within mining areas, workers, the general public, and environmental features may become contaminated or exposed to toxic substances resulting in ***moderate*** to ***high*** impacts. As with the North Alternative, hazardous materials encountered in the construction area under the South Alternative would require special handling to prevent releases. Contaminated soil and groundwater, if encountered, also may qualify as hazardous waste and would require handling and disposal according to applicable local, state, and federal regulations.

Hazardous materials, such as vehicle fuels, oil, hydraulic fluid, and other vehicle maintenance fluids would be used and stored in project work areas during construction of the South Alternative. As with the North Alternative, gasoline, diesel fuel, oil, hydraulic fluid, lubricants, paints, solvents, adhesives, and cleaning chemicals used in construction activities, equipment, and vehicles could be released during construction of the South Alternative. Mitigation measures, described in Section 3.13.4, Mitigation, would be implemented to manage unanticipated hazardous materials and spills. The resulting impact from unknown contaminates or the unintended release of construction-related hazardous materials during construction of the South Alternative would be ***low*** to ***none***.

Operation and maintenance of the South Alternative has the potential to result in the release or exposure of hazardous materials where previous or current mining activities are crossed by the corridor or access roads. Ground disturbing maintenance activities could result in ***moderate*** to ***high*** impacts if contaminants are disturbed and released.

South Alternative Route Options

<u>Options 1 through 4</u>

Options 1 through 4 would use steel single-pole structures in the same configuration as discussed above; therefore, similar ***low*** electric and magnetic field levels would be generated.

Impacts from contaminant disturbance under Options 1 through 4 would be similar to those described for the South Alternative (***moderate*** to ***high***). However, Option 3 would avoid both the Blackfoot Bridge Mine and the Conda/Woodall Mountain Mine, while Option 4 would avoid only the Conda/Woodall Mountain Mine.

3.13.4 Mitigation

The following mitigation measures have been identified to reduce or eliminate adverse impacts from the construction and operation and maintenance of the Project.

- Avoid excavation in areas of identified contaminants.
- Conduct soil sampling in areas reasonably likely to be contaminated by mining waste containing selenium and other hazardous substances.
- Prepare and implement Spill Prevention and Response Procedures to avoid and contain accidental spills, including notification assessment, security, clean-up, and reporting requirements. The contractor would be required to follow the Spill Prevention and Response Procedures and immediately notify the proper authorities in the event of a hazardous material or petroleum spill.

- Provide spill prevention kits at designated locations on the project site and where hazardous materials are stored.
- Inspect equipment daily for potential leaks.
- Initiate discussions with local fire districts prior to construction and work with the districts and other appropriate emergency response entities to develop appropriate fire and emergency response plans.
- Construct and operate the new transmission line according to the NESC.
- Restore reception quality if radio or television interference occurs as a result of constructing the transmission line so that reception is as good as or better than before the interference.
- Install barriers, gates, and postings at appropriate access points (see Section 3.1.4, Land Use).
- Apply herbicides according to the BPA Transmission System Vegetation Management Program EIS (DOE/EIS-0285) and label recommendations (see Section 3.4.4, Vegetation).
- Design temporary and permanent access roads to control runoff and prevent erosion (see Section 3.5.4, Geology and Soils).
- Cease project construction near stream courses under high flow conditions (see Section 3.6.4, Water Resources, Floodplains, and Wetlands).
- Locate refueling and servicing operations outside of AIZs. Use pumps, funnels, absorbent pads, and drip pans when fueling or servicing vehicles (see Section 3.6.4, Water Resources, Floodplains, and Wetlands).

3.13.5 Unavoidable Impacts Remaining after Mitigation

With implementation of mitigation, it is unlikely that there would be any unavoidable impacts on public health and safety from the mobilization of mining or other contaminants under either alternative. However, there is a higher potential for such unavoidable impacts to occur under the South Alternative because of the number of former, current, and proposed mining sites that this alternative would be adjacent to or cross.

Once built, the proposed transmission line could cause accidental injury from electric shock if someone were to bring conductive material too close to the lines within the ROW. EMF levels directly under the transmission lines and within the ROW could be higher than ambient levels, but would meet all applicable regulations and standards and would dissipate rapidly beyond the transmission line ROW.

3.13.6 No Action Alternative

Under the No Action Alternative, the Project would not be built, so the public health and safety impacts related to the construction, operation, and maintenance of the transmission lines would not occur.

3.14 Air Quality

3.14.1 Affected Environment

The project corridors for both the North and South alternatives are within airshed 20, as identified by the Montana/Idaho Airshed Group (Montana/Idaho Airshed Group 2010). As shown in Map 3-9, airshed 20 is located in the southeast corner of Idaho, adjacent to Wyoming to the east and Utah to the south. Pocatello and Idaho Falls are located along the western boundary of airshed 20 (Montana/Idaho Airshed Group 2010).

National and State Ambient Air Quality Standards

The Clean Air Act and its amendments led to the creation of National Ambient Air Quality Standards (NAAQS) by EPA for six criteria air pollutants: carbon monoxide, sulfur dioxide, ozone, particulate matter (PM), nitrogen dioxide, and lead. There are two types of NAAQS: primary standards and secondary standards. Primary standards set limits to protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards set limits to protect public welfare, including protection against decreased visibility, and damage to animals, crops, vegetation, and buildings (EPA 2011b). Table 3-29 summarizes the NAAQS for the six criteria pollutants. Idaho has adopted the federal air quality standards in the Rules for the Control of Air Pollution in Idaho (IDAPA 58.01.01.575-587). Compliance with the NAAQS is determined based on the averaging time and statistical form of each standard.

Map 3-9. Idaho Airsheds

Table 3-29. National Ambient Air Quality Standards

Pollutant	Primary/ Secondary	Averaging Time	Level	Statistical Form
Carbon Monoxide	Primary	8-hour	9 ppm	Not to be exceeded more than once per year
		1-hour	35 ppm	
Lead	Primary and Secondary	Rolling 3 month average	0.15 µg/m^3	Not to be exceeded
Nitrogen Dioxide	Primary	1-hour	100 ppb	98th percentile, averaged over 3 years
	Primary and Secondary	Annual	53 ppb	Annual Mean
PM_{10}	Primary and Secondary	24-hour	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
$PM_{2.5}$	Primary and Secondary	Annual	15.0 µg/m^3	annual mean, averaged over 3 years
		24-hour	35 µg/m^3	98th percentile, averaged over 3 years
Ozone	Primary and Secondary	8-hour	0.075 ppm	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Sulfur Dioxide	Primary	1-hour	75 ppb	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
	Secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

Source: EPA 2012a

ppm = parts per million; ppb = parts per billion; µg/m3 = micrograms per cubic meter; PM_{10} is particulate matter less than 10 micrometers in diameter; $PM_{2.5}$ is less than 2.5 micrometers in diameter

The EPA classifies geographic areas as attainment or non-attainment areas based upon levels of air pollutants. A geographic area that meets or has pollution levels below the NAAQS is called an attainment area for that pollutant, while an area that does not meet the NAAQS is designated a non-attainment area for that pollutant. Former nonattainment areas currently meeting the NAAQS are designated maintenance areas. State implementation plans are designed to bring nonattainment areas into compliance with the NAAQS. Caribou County is an attainment area for all criteria pollutants (EPA 2011b).

In addition to establishing NAAQS, the Clean Air Act established a Prevention of Significant Deterioration program that regulates the allowable increase in air pollution in relatively clean areas from new major sources or major modifications of existing sources. Special additional air quality and visibility protections are provided for Class I Areas, which include national parks larger than 6,000 acres and national wilderness areas and national memorial parks which exceed 5,000 acres, in existence on August 7, 1977 (42 U.S.C. 7475(d)(2)(B)). There are no Class I areas in the vicinity of the project corridors.

Air Quality Monitoring Data

The most recent monitoring data from the air quality monitoring sites closest to the project area are summarized in Table 3-30. Available monitoring data shows that pollutant concentrations of nitrogen dioxide, PM_{10}, and $PM_{2.5}$ in the region are generally below the NAAQS (PM_{10} is particulate matter less than 10 micrometers in diameter; $PM_{2.5}$ is less than 2.5 micrometers in diameter). Ozone concentrations approaching the NAAQS have been recorded on the Wyoming range, approximately 60 miles east of the project corridor. The sulfur dioxide monitor at the Monsanto phosphorus plant in Soda Springs, Idaho recorded 1-hour concentrations just above the NAAQS in 2010. However, data from 2011 shows a substantially lower 1-hour sulfur dioxide concentration of 53.2 parts per billion, below the standard of 75 parts per billion.

Table 3-30. Air Quality Monitoring Data

EPA Monitor ID	Monitor Location	Year	Pollutant	Maximum Concentration	Averaging Period	NAAQS
16-077-0011	Shoshone-Bannock Tribes of Fort Hall Reservation of Idaho	2005	Nitrogen Dioxide	35.8 ppb	1-hour	100 ppb
16-029-0003	Soda Springs High School	2002	PM_{10}	45 µg/m^3	24-hour	150 µg/m^3
		2004	$PM_{2.5}$	14.9 µg/m^3	24-hour	35 µg/m^3
56-035-0097	Wyoming Range	2011	Ozone	0.072 ppm	8-hour	0.075 ppm
16-029-0031	Soda Springs, Monsanto phosphorus plant	2011	Sulfur Dioxide	53.2 ppb	1-hour	75 ppb
				0.0423ppm	3-hour	0.5 ppm

Source: EPA Air Quality System Data retrieved June 17, 2011, except for sulfur dioxide which was updated on July 5, 2012.

Alternative Route Options

North Alternative Route Options

Both the Long Valley Road Option and the North Highland Option would be located in airshed 20, and would therefore have similar air quality conditions as the North Alternative.

South Alternative Route Options

Options 1 through 4 would be located in airshed 20, and would therefore have similar air quality conditions as the South Alternative.

3.14.2 Environmental Consequences of the North Alternative

Potential construction-related air quality impacts from the North Alternative include PM, fugitive dust, and carbon monoxide emissions from land clearing and mobile source emissions. As discussed above, Caribou County is an attainment area for all criteria pollutants (EPA 2011b). Therefore, the Project would not be required to comply with the general conformity rules (40 Code of Federal Regulations [C.F.R.] 93 Subpart B).

Construction activities that could create dust include road building and grading, on-site travel on unpaved surfaces, work area clearing and preparation, and other soil disrupting operations. Fine grained soils, such as the loess soils located in the project area (see Section 3.5, Geology and Soils), are particularly susceptible to generating dust emissions when disturbed. Most access roads would be on the native surface (dirt roads or sparse vegetation), and air quality impacts are expected to be localized, temporary (only occurring during active construction), and controlled as practicable. Wind erosion of disturbed areas would also contribute to fugitive dust until revegetation of areas occurs. Impacts on air quality due to fugitive dust from construction of the North Alternative are expected to be short term and ***low***, and implementation of mitigation measures, as described in Section 3.14.4, would further minimize impacts.

Heavy equipment and vehicles, including those with diesel internal combustion engines, would emit pollutants such as carbon monoxide, carbon dioxide (CO_2), sulfur oxides, PM, oxides of nitrogen, and air toxics (see Section 3.15, Greenhouse Gas Emissions). The amount of pollutants emitted from construction vehicles and equipment would be relatively small relative to existing air pollution sources in the airshed. The Project also does not meet the definition of a major source regulated by the Prevention of Significant Deterioration program and the North Alternative would not be adjacent to any Class I areas. For these reasons, the air quality impacts from construction of the North Alternative would be short term and ***low***.

Dust and emissions from the operation and maintenance of the North Alternative would be long term in nature, but would result in a ***low*** impact. Quantities of potential emissions due to the occasional operation of maintenance vehicles on access roads would be very small, temporary, and localized. Vehicles would use the permanent access roads that have rocked surfaces which would limit the quantity of dust generated.

The transmission lines themselves create limited air emissions. The high electric field strength of transmission lines causes a breakdown of air at the surface of the conductors called corona. Corona has a popping sound that is most easily heard during rainstorms. When corona occurs, amounts of ozone and nitrogen oxides are released in such small quantities that they are generally too small to be measured or to have any significant effect on humans, plants, or animals (BPA 2009). Overall, air emissions for corona under the North Alternative would have ***no*** to ***low*** impact on air quality.

North Alternative Route Options

Long Valley Road Option

The Long Valley Road Option would result in a shift of the proposed corridor of the North Alternative off Idaho state lands and on to private agriculture and grazing lands. The option is approximately 7 miles long and would add about 0.6 mile to the length of the North Alternative. Given its similarities to the proposed corridor described above, the Long Valley Road Option would have similar short-term, ***low*** impacts.

North Highland Option

The North Highland Option would shift the proposed corridor of the North Alternative off private lands with a series of wetland complexes to C-TNF lands and some private land. Given its proximity to the corridor of the North Alternative, the North Highland Option would result in the same short-term, ***low*** impacts on air quality.

3.14.3 Environmental Consequences of the South Alternative

Potential construction-related air quality impacts from the South Alternative would be the same as the North Alternative, and could include PM, fugitive dust, and carbon monoxide emissions from land clearing and mobile source emissions.

Dust could be generated from the same construction activities as those described for the North Alternative. Air quality impacts from access roads and wind erosion of disturbed areas for the South Alternative would also be the same as the North Alternative. Impacts on air quality due to fugitive dust from construction of the South Alternative would be short term and ***low***, and implementation of mitigation measures (Section 3.14.4) would further minimize impacts.

Similar to the North Alternative, heavy equipment and vehicles would emit pollutants such as carbon monoxide, CO_2, sulfur oxides, PM, oxides of nitrogen, and air toxics during construction of the South Alternative (see Section 3.15, Greenhouse Gas Emissions). Compared to existing pollution sources in the airshed, the amount of pollutants emitted from construction vehicles and equipment would be relatively small. In addition, the Project also does not meet the definition of a major source regulated by the Prevention of Significant Deterioration program and the South Alternative would not be adjacent to any Class I areas. Therefore, the impacts on air quality from construction of the South Alternative would be short term and ***low***.

Dust and emissions from the operation and maintenance of the South Alternative would be long term, but would yield a ***low*** impact. Quantities of potential emissions due to the occasional operation of maintenance vehicles on access roads would be small, temporary, and localized.

As with the North Alternative, when corona occurs around the transmission lines of the South Alternative, small quantities of ozone and nitrogen oxides would be released. However, they are generally too small to be measured or to have any significant effect on humans, plants, or animals (BPA 2009). Overall, air emissions for corona for the South Alternative would have ***no*** to ***low*** impact on air quality.

South Alternative Route Options

<u>Options 1 through 4</u>

Options 1 through 4 would remain in the same airshed as the South Alternative, and are expected to result in the same impacts on air quality (construction activities causing dust, vehicle emissions, and corona) as the South Alternative.

3.14.4 Mitigation

The following mitigation measures have been identified to reduce or eliminate air quality impacts from the Project.

- Ensure construction vehicles travel at low speeds on access roads and at construction sites to minimize dust.
- Do not burn during construction activities.
- Shut down idling construction equipment, if feasible.
- Locate staging areas as close to construction sites as practicable to minimize driving distances between staging areas and construction sites.
- Recycle or salvage non-hazardous construction and demolition debris where practicable.
- Use local rock sources for road construction where practicable.
- Prepare a Fugitive Dust Control Plan (see Section 3.5.4, Geology and Soils).
- Use appropriate seed mixes; application rates, methods, and timing to revegetate disturbed areas (see Section 3.4.4, Vegetation).
- Limit the time soils are left exposed (see Section 3.5.4, Geology and Soils).

3.14.5 Unavoidable Impacts Remaining after Mitigation

Potential unavoidable impacts would include slight increases in emissions and dust generated during construction and operation of the Project.

3.14.6 No Action Alternative

Under the No Action Alternative, the proposed Hooper Springs transmission line would not be built, so the air quality impacts related to the construction, operation, and maintenance of the transmission lines would not occur.

3.15 Greenhouse Gas Emissions

3.15.1 Affected Environment

GHGs are chemical compounds found in the Earth's atmosphere that absorb and trap infrared radiation as heat. Global atmospheric GHG concentrations are a product of continuous emission (release) and removal (storage) of GHGs over time. In the natural environment, this release and storage is largely cyclical. For instance, through the process of photosynthesis, plants capture atmospheric carbon as they grow and store it in the form of sugars. When plants decay or are burned, the stored carbon is released back to the atmosphere, available to be taken up by new plants (Ecological Society of America 2008). In forests, the carbon can be stored for long periods of time, and because they are so productive and long-lived, forests have an important role in carbon capture and storage and can be thought of as temporary carbon reservoirs. There are large amounts of GHGs stored deep underground in the form of fossil fuels, and soils store carbon in the form of decomposing plant material and serve as the largest carbon reservoir on land.

Human activities such as deforestation, soil disturbance, and burning of fossil fuels disrupt the natural cycle by increasing the GHG emission rate over the storage rate, which results in a net increase of GHGs in the atmosphere. When forests are permanently converted to cropland, for instance, or when new buildings or roads displace vegetation, the GHG storage capacity of the disturbed area is diminished. CO_2, nitrous oxide, and methane emissions increase when soils are disturbed (Kessavalou et al. 1998), and burning fossil fuels releases GHGs that have been stored underground for thousands of years and cannot be readily replaced. The resulting buildup of heat in the atmosphere due to increased GHG levels increases temperatures, which causes warming of the planet through a greenhouse-like effect (U.S. Energy Information Administration 2009a). Increasing levels of GHGs could increase the Earth's temperature by up to 7.2°F by the end of the twenty-first century (EPA 2010b).

The principal GHGs emitted into the atmosphere through human activities are CO_2, methane, nitrous oxide, and fluorinated gases, such as hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride (EPA 2010b). CO_2 is the major GHG emitted, and the burning of fossil fuels accounts for 81 percent of all U.S. GHG emissions (EPA 2010b; Houghton 2010; U.S. Energy Information Administration 2009b). CO_2 enters the atmosphere as a result of such activities as land use changes; burning of fossil fuels including coal, natural gas, oil, and wood products; and from the manufacturing of cement. CO_2 levels have increased to 379 parts per million within the last century, a 36 percent increase, as a result of human activities (Intergovernmental Panel on Climate Change 2007). See Appendix J for a discussion of GHGs.

Regulatory Framework

The Clean Air Act is the federal air pollution control law under which numerous EPA programs have been implemented, including NAAQS for criteria pollutants, emissions standards for mobile sources and fuels, and permitting programs to control emissions from large generation sources such as power plants. In October 2009, EPA issued a Final Mandatory Reporting of Greenhouse Gases Rule (40 C.F.R. Part 98) that requires reporting of GHG emissions from large sources and suppliers in the United States. The purpose of the rule is to collect accurate and timely greenhouse gas data to inform future policy decisions. Under the rule, suppliers of fossil fuels or industrial GHGs, manufacturers of vehicles and engines, and facilities that emit 25,000 metric tons or more per year of GHGs, are required to submit annual reports to EPA (EPA 2010b). Implementation of Part 98 is referred to as the Greenhouse Gas Reporting Program. Sources and suppliers subject to Part 98 began reporting their yearly emissions under the Greenhouse Gas Reporting Program with the 2010 reporting year. Other EPA initiatives regulating GHG emissions include emissions standards for motor vehicles and a framework for addressing GHG emissions from stationary sources in permitting programs (Final GHG Tailoring Rule).

For federal agencies such as BPA, Executive Orders 13423 and 13514 require agencies to measure, manage, and reduce GHG emissions by agency-defined target amounts and dates. Specific to the NEPA process, CEQ issued “Draft NEPA Guidance on the Consideration of the Effects of Climate Change and Greenhouse Gas Emissions” in 2010. Key GHG and climate change considerations for NEPA documents contained in this draft guidance include the following:

- Both the effect of the Project on climate change (as measured through GHG emissions) and the effect of climate change on the Project should be considered (e.g. sea level rise, extreme weather events, ecosystem effects) to the extent they are “reasonably foreseeable.”
- Recommends 25,000 metric tons carbon dioxide equivalent (CO_2e) emissions annual as a level warranting detailed assessment—the same level as the GHG reporting rule discussed above.
- Does not recommend any specific protocol for quantifying land use and land management-related GHG emissions and carbon sequestration and seeks public input on this issue.

3.15.2 Environmental Consequences of the North Alternative

Greenhouse Gas Emissions

Implementation of the North Alternative would contribute to GHG concentrations in several different ways. CO_2, methane, and nitrous oxide emission levels would incrementally increase as vegetation and soils are removed and/or disturbed during construction of the transmission line (Kessavalou et al. 1998) and through the operation of construction-related vehicles during the construction period. Emissions would also occur during operation and maintenance of the transmission line. Emissions from construction, operations, and maintenance-related vehicles on and off the transmission line ROW also would impact atmospheric GHG concentrations incrementally because construction equipment and vehicles would be fueled by gasoline and diesel combustion motors.

GHG emissions resulting from the North Alternative were calculated using the methodology described in Appendix J. Calculations were done for two types of activities that produce GHG emissions: building the transmission line and ongoing annual operations and maintenance for the estimated 50-year-long operational life of the transmission line. GHG emissions associated with construction activities would occur during 16 months, over a 2 year construction period and equal approximately 8 months (split between two construction seasons) of total emissions.

The North Alternative would result in an estimated total of 12,244 metric tons of CO_2e emissions during construction and a total of an estimated 126 metric tons of CO_2e emissions for ongoing operations and maintenance activities over the 50-year lifespan of the line, as shown in Table 3-31. Emissions from construction of the North Alternative would be equivalent to the emissions from approximately 2,156 passenger vehicles per year. Operation and maintenance emissions under the North Alternative would be equivalent to the emissions from approximately 22 passenger vehicles per year.

Though recognized as a contribution to overall GHGs, measurement of emissions from soil disturbances is difficult. However, research has shown that emissions as a result of soil disturbance are short-lived and return to background levels within several hours (Kessavalou et al. 1998). Based on the conservative methodology used to estimate construction vehicle emissions, the emissions related to soil disruption and annual vegetation decay are accounted for in the overall construction emission rates. Carbon that would be stored in removed vegetation would be offset in time by the growth and accumulation of carbon in soils and new vegetation.

Some trees would be removed as part of the North Alternative and soil disturbance would occur. The nature of tree removal is to permanently convert land (i.e., the proposed ROW) to a non-forested area. Therefore, this action can be characterized as permanently maintaining the proposed ROW at the minimum level of solid carbon storage.

Tree removal for road construction/improvement and danger tree removal would constitute a reduction in the GHG storage capacity of the area. For the purposes of analysis it was assumed that each affected acre contained the maximum level of carbon storage, which resulted in an estimated net carbon footprint associated with the removal ofapproximately118.8 acres of trees resulting in the loss of 6,747 metric tons of CO_2e. Vegetation removal would result in a loss of carbon storage equivalent to 1,188 passenger vehicles per year. (Detailed information related to these calculations is presented in Appendix J).

Removal and disposal of each tree is an energy consuming process that results in GHG emissions via fuel combustion. This component of GHG emissions, however, was accounted for above in terms of transmission line construction.

Table 3-31. Net Carbon Footprint for Construction and Operation of the North Alternative

Type of Activity	Total CO_2e Emissions in Metric Tons
Construction	12,244
Operation and maintenance (over the entire project life)	126
Permanent vegetation removal	6,747

To provide context for this level of emissions, the EPA mandatory reporting threshold for large sources of GHGs is 25,000 metric tons of CO_2e emitted annually (74 FR 56260). This threshold is approximately the amount of CO_2e generated by 4,400 passenger vehicles per year. Comparatively, the emissions during project construction would be equivalent to the emissions generated by about 2,156 passenger vehicles per year. Operation and maintenance activities would translate into CO_2 emissions about equal to that of 22 passenger vehicles per year. Lost vegetation carbon storage capacity would be equivalent to 1,188 passenger vehicles per year. Because these activities would be similar to existing conditions, project GHG emissions likely would not represent a substantial change. Therefore, given the low contributions, the impacts of construction, operation, and maintenance of the North Alternative on GHG concentrations would be ***low***.

Climate Change

Potential impacts of climate change on the Project include the following (U.S. Global Change Research Program 2009):

- Increased exposure of transmission line and related infrastructure to severe weather events, including flooding and high winds.
- Increased risk for wildfires due to higher summer temperatures and earlier spring snowmelt.
- Increased demand for energy for cooling, which will increase peak electricity demand.

While these general impacts are likely and supported by scientific evidence, the exact magnitude of these future effects at the local level (e.g. within the North and South alternative corridors) is not known. It would not be reasonable to attempt to forecast these effects for the NEPA review of an individual project because there is no currently available tool or methodology for readily performing such an assessment within the schedule and budget limitation of an EIS. Despite the inability to predict specific local level impacts, climate change impacts were considered in the design of the Project.

North Alternative Route Options

Long Valley Road Option

The Long Valley Road Option would marginally increase construction-related GHG emissions due to the longer route, but would not alter the overall conclusion or magnitude of GHG emissions in comparison to the North Alternative. As with the North Alternative, the effect on GHG emissions would be ***low***. The routing option would not be distinguishable from the North Alternative in terms of vulnerability to impacts from climate change.

North Highland Option

The North Highland Option would have similar impacts as described for the North Alternative, though the amount of tree clearing would increase slightly based on the change in route. However, this change would not alter the overall conclusion or magnitude of GHG emissions in comparison to the North Alternative**.** The routing option would not be distinguishable from the North Alternative in terms of vulnerability to impacts from climate change.

3.15.3 Environmental Consequences of the South Alternative

Greenhouse Gas Emissions

The construction assumptions for the North Alternative were used to calculate GHG emissions for the South Alternative. While, the construction assumptions are the same, the South Alternative is approximately two-thirds of the distance of the North Alternative; it is assumed that the GHG emissions would act proportionally to the distance and would be two-thirds of the GHG emissions from the North Alternative. South Alternative emissions would be 8,081 metric tons of CO_2e emissions from construction, or the equivalent of 1,423 passenger vehicles per year. Similarly, operations and maintenance assumptions used for the North Alternative would likely be the same for the South Alternative; 84 metric tons of CO_2e emissions stemming from operation and maintenance activities would occur over the life of the Project, or approximately 15 passenger vehicles per year, as shown in Table 3-32.

The South Alternative would impact a noticeably smaller amount of forested area, with approximately 64.5 acres to be removed, resulting in a loss of approximately 3,685 metric tons of CO_2e. Vegetation removal would result in a loss of carbon storage equivalent to 649 passenger vehicles per year. The amount of trees projected to be removed represents the worst case scenario and while the different routes within the South Alternative would alter the amount of forested area removed, the differences in the amount of CO_2e lost would be minimal and would not change the overall conclusion of this analysis. As with the North Alternative, the effect on GHG emissions would be ***low***.

Table 3-32. Net Carbon Footprint for Construction and Operation of the South Alternative

Type of Activity	Total CO_2e Emissions in Metric Tons
Construction	8,081
Operation and maintenance (over the entire project life)	84
Permanent vegetation removal	3,685

Climate Change

Potential impacts of climate change on the South Alternative would be the same as those described for the North Alternative.

South Alternative Route Options

Options 1 through 4

GHG emissions-related impacts would be similar for all four routing options compared to the South Alternative. The differences in acreages affected during construction would result in slight changes to overall emissions compared to the South Alternative. Emissions as a result of operations and maintenances would be expected to be the same.

The routing options would not be distinguishable from the South Alternative in terms of vulnerabilities to impacts from climate change.

3.15.4 Mitigation

The following mitigation measures have been identified to reduce or eliminate GHG emissions from the Project.

- Shut down idling construction equipment, if feasible.
- Locate staging areas as close to construction sites as practicable to minimize driving distances between staging areas and construction sites.
- Locate staging areas in previously disturbed or graveled areas to minimize soil and vegetation disturbance where practicable.
- Encourage the use of the proper size of equipment for the job to maximize energy efficiency.
- Encourage the use of alternative fuels for generators at construction sites, such as propane or solar, or use electrical power where practicable.
- Recycle or salvage non-hazardous construction and demolition debris where practicable.
- Use local rock sources for road construction where practicable.

3.15.5 Unavoidable Impacts Remaining After Mitigation

Potential unavoidable impacts would include slight increases in GHG releases necessary for construction and operation of the Project. These impacts would be primarily short term and low as discussed above in Sections 3.15.2 and 3.15.3. The transmission line and related infrastructure would be subject to climate change impacts, such as more extreme weather events, that may be unavoidable. The exact magnitude of these climate change impacts is not known, but was a consideration in the design of the Project with the goal of maximizing future reliability.

3.15.6 No Action Alternative

Under the No Action Alternative, the Project would not be built, so the GHG emissions related to the construction, operation, and maintenance of the transmission lines would not occur.

3.16 Cumulative Impacts

CEQ regulations for implementing the NEPA require the assessment of cumulative impacts in the decision-making process for proposed federal projects. Cumulative impacts are defined as the "impact on the environment, which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 C.F.R. 1508.7). As stated in the CEQ handbook, "Considering Cumulative Effects under the National Environmental Policy Act" (CEQ 1997), cumulative impacts should be analyzed in terms of the specific resource, ecosystem, and human community being affected and focus on effects that are truly meaningful.

This chapter provides an analysis of potential cumulative impacts related to the Project. The analysis was accomplished using four steps summarized below. The first two steps are further discussed in Section 3.16.1, the third step is addressed in Section 3.16.2, and the fourth step is addressed in Section 3.16.3.

- **Step 1 - Identify Potentially Affected Resources.** Resources are identified that potentially could be cumulatively affected by the Project in combination with other actions.

- **Step 2 - Establish Boundaries.** Spatial (i.e., location) and temporal (i.e., time) boundaries are established for the consideration of other potentially cumulative actions.

- **Step 3 - Identify Potentially Cumulative Actions.** Other past, present, and reasonably foreseeable future actions are identified that have contributed, or could contribute, to cumulative impacts on the resources identified in Step 1. These actions fall within the spatial and temporal boundaries established in Step 2.

- **Step 4 - Analyze Cumulative Impacts.** For each resource, the actions identified in Step 3 are analyzed in combination with the impacts of the Project. This analysis describes the overall cumulative impact related to each resource and the Project's contribution to this cumulative impact.

3.16.1 Affected Resources and Resource Boundaries

In identifying the resources that could be cumulatively affected by the Project and other actions (Step 1), BPA took into account the likelihood that a variety of other actions, with a wide variety of potential effects on numerous resources, have taken or could take place within the geographic area surrounding the Project. Accordingly, BPA determined that all of the same resources described in Sections 3.1 through 3.15 of this EIS should be considered in the cumulative impacts analysis.

BPA then established reasonable boundaries for the consideration of other past, present, and reasonably foreseeable future actions (Step 2). These boundaries are in terms of where the other actions are located (i.e., spatial boundaries), and when in time these actions took place or will take place (i.e., temporal boundaries). Accordingly, for each resource, the spatial boundary is the area where other past, present, and reasonably foreseeable future actions have, are, or could take place and result in cumulative impacts on the affected resource when combined with the impacts of the Project. Appropriate spatial boundaries can vary for each resource.

The temporal boundary describes how far into the past, and forward into the future, other actions should be considered in the cumulative impact analysis. For the purposes of this analysis, past and present actions that have shaped the landscape since approximately the first European settlement in the general vicinity (i.e., since approximately the mid-1800s) are considered, to the extent that they have had lasting effects contributing to cumulative impacts. The reasonably foreseeable nature of potential future actions helps define the forward-looking temporal boundary. While it is acknowledged that the Project could exist for 50 or more years and could contribute to cumulative impacts during that timeframe, it would be speculative to consider actions beyond what is reasonably foreseeable (see Section 3.16.2). Given this limitation, the forward-looking temporal boundary has been established generally at approximately 10 years following the expected completion of construction of the Project, which is a reasonable timeframe by which the reasonably foreseeable future actions identified in Section 3.16.2 likely would be implemented.

3.16.2 Cumulative Actions

After establishing appropriate spatial and temporal boundaries, BPA identified other past, present, and reasonably foreseeable future actions potentially contributing to cumulative effects along with the Project (Step 3). To identify these other actions, BPA utilized information gathered in the course of developing the analysis of direct impacts related to the Project and also consulted various federal, tribal, state, and local jurisdictions. BPA also considered guidance on determining what actions to consider in a cumulative analysis from a variety of sources, including the CEQ Cumulative Effects Handbook referenced above.

The following discussion provides more information on how potentially cumulative past, present, and reasonably foreseeable future actions were identified, and describes the cumulative actions that have been identified for the cumulative impacts analysis in this EIS.

Past actions relevant to the cumulative impacts analysis in this EIS are those that have previously taken place and are largely complete, but that have lasting effects on one or more resources that also would be affected by the Project. For these past actions, CEQ has issued a guidance memo entitled "Guidance on Consideration of Past Actions in Cumulative Effects Analysis." This guidance states that consideration of past actions is only necessary in so far as it informs agency decision-making. Typically the only types of past actions considered are those that continue to have present effects on the affected resources. In addition, the guidance states that "[a]gencies are not required to list or analyze the effects of individual past actions unless such information is necessary to describe the cumulative effect of all past actions." Accordingly, agencies are allowed to aggregate the effects of past actions without "delving into the historical details of individual past actions." In this EIS, impacts associated with past actions are largely captured in the sections of each resource chapter that discuss the affected environment in the project area (see Sections 3.1 through 3.15).

Present actions are those that are currently occurring and also result in impacts on the same resources as would be affected by the Project. Present actions generally include ongoing land management and utilization activities (such as farming), as well as recently completed residential, commercial, and industrial development. Like past actions, relevant present actions have largely been captured in Sections 3.1 through 3.15 of this EIS.

Reasonably foreseeable future actions are those actions that are likely to occur and affect the same resources as the Project. For a future action to be considered reasonably foreseeable there must be a level of certainty that it will occur. This level of certainty is typically met by the submission of a formal project proposal or application to the appropriate jurisdiction, approval of such a proposal or application, inclusion of the future action in a formal planning document, or other similar evidence. For future actions in the proposal stage, the action must be sufficiently defined in terms of location, size, design, and other relevant features to permit meaningful consideration in the cumulative impacts analysis in order to be included in this analysis.

The following summarizes past, present, and reasonably foreseeable future actions considered in this cumulative impacts analysis.

- **Agriculture—**Conversion of land to agricultural uses has occurred since European settlement began in the general project in the mid-1800s. These agricultural uses continue today, and are expected to continue into the foreseeable future Agricultural uses in the project area tend to be located in valleys and other flatter, lower elevation areas in the project vicinity. Agriculture uses include predominately cultivated fields and managed pastures that are used for grazing and hay production. Primary cultivated crops are small grains, mostly grown without irrigation. Some private agricultural parcels in the project area are enrolled in USDA and Farm Service Agency conservation easement programs, in addition to other non-federal conservation easement programs, and enrollment in these programs is expected to continue in the future.
- **Residential, commercial, and other development—**since the mid-1800s, rural residential uses, often associated with farming and ranching activities, have been developed in the project area. Like agricultural uses, these scattered rural residences tend to be located in valleys and other flatter, lower elevation areas in the project vicinity. These rural residential uses continue to exist today, and are expected to continue into the foreseeable future. In addition, residential and commercial uses – along with public, industrial, and other developed uses – have been developed within the City of Soda Springs. The 2006 Caribou County Comprehensive Plan encourages development within existing city limits, not within rural areas. Accordingly, future development of residential, commercial, industrial and other developed uses that may occur in the project area would be expected to occur primarily within the city limits of Soda Springs.
- **Mining operations—**Phosphate mining operations began in southeastern Idaho in the early 20th century and continue to this day. Mining for phosphorus and manufacturing the ore into elemental phosphorus and commercial fertilizers are now the dominant economic industries in the region. The major phosphate mines in this region are open pit or contour strip operations. Over the years, a total of 31 phosphate mines have been developed in southeastern Idaho (BLM 2011a). Of these, 12 have been mined out and are now closed. The remaining mines continue to operate, and numerous undeveloped mining leases exist throughout the region. Existing mining operations within the general vicinity of the Project include the Smoky Canyon Mine, the Dry Valley Mine, and the South Rasmussen

Ridge Mine, Because the future market for phosphate fertilizers and phosphorous is expected to remain strong in the United States and worldwide, phosphate mining is expected to be an ongoing or growing activity in southeastern Idaho in the foreseeable future (BLM 2011a). Reasonably foreseeable mining operations within the general vicinity of the Project include the proposed Rasmussen Valley, Blackfoot Bridge, Lanes Creek, Husky-North Dry Ridge, and Dairy Syncline mining projects.

- **Logging**—Logging of forested habitats throughout the project area has occurred since at least the late 1800s and continues to take place today. Most this activity currently takes place primarily on forested federal lands. It is reasonable expected that logging also will continue in the foreseeable future.
- **Road construction**—Past construction of local and state highways (e.g. Highway 34) has occurred in the project area. This construction has bisected native grasslands, forests, shrub-steppe and agricultural lands in the project area. In addition, numerous other county and local roads have been constructed throughout the project area. Although there are no known plans for any new highways or major roadways in the project area, it is reasonably foreseeable that maintenance and/or improvement of existing roadways could occur. In addition, it is likely that additional now county or local roads could be developed in the project area.
- **Transmission line construction**—BPA and other utilities have built transmission and distribution lines throughout the project area, as well as substations and other ancillary facilities. Operation and maintenance of these transmission lines continue today, and are expected to continue into the reasonably foreseeable future. In addition, Idaho Power and Rocky Mountain Power have proposed to construct the Gateway West Transmission Line Project, which would cross southern Idaho in the C-TNF in Bear Lake County, Idaho.

3.16.3 Cumulative Impact Analysis

This section provides the analysis, by resource, of the cumulative impacts of past, present, and reasonably foreseeable future actions described in Section 3.16.2 in combination with the potential impacts of the Project identified in Sections 3.1 through 3.15 (Step 4). The following analysis describes these potential cumulative impacts in the order that the affected resources are presented in Sections 3.1 through 3.15 of this EIS. For some resources, cumulative impacts would be approximately the same for both action alternatives (the North Alternative and the South Alternative); for other resources, cumulative impacts would vary by alternative.

Land Use

Land use in the project area has incrementally changed due to cumulative past and present development, and this trend would be expected to continue with future development. These land use changes have predominantly introduced agriculture uses (mainly crops and livestock grazing), rural residential uses, and mining uses and throughout the area. Road construction and transmission line operation have also converted undeveloped and agricultural land uses into road and utility ROWs. Future operation and maintenance of existing PacifiCorp and LVE transmission lines and substations would continue utility and transportation land uses. Current and future mining in the area would convert agricultural and undeveloped land uses to an industrial land use in areas with phosphate deposits. Development of new mines using federal mineral leases would require an environmental review by the overseeing agency (usually BLM or C-TNF), which would require a mine reclamation plan. In general, implementation of the reclamation plan would require the restoration of previous land uses after minerals are extracted. Despite reclamation plans, historic mines may result in selenium contamination that may prohibit the restoration of previous land uses until after contamination clean up.

Future increases in development could reduce agricultural and undeveloped land uses. This conversion would be limited through local participation in resource conservation programs that limit development on some properties. Agricultural land use conversion would be further limited through zoning regulations that require land uses to be consistent with agricultural use (BLM 2010; Caribou County 2006; USFS 1997, 2003a, 2006). Assuming this focus on agriculture continues under future county comprehensive plan updates, agricultural land conversion for future development could cumulatively reduce the amount of land used for agricultural purposes. Although due to county planning efforts, this reduction likely would be considered negligible given the extremely small portion of total agricultural lands in the general area that would be converted. Non-agricultural undeveloped lands would be expected to continue to be converted to other uses in the future.

Under the North and South alternatives, BPA would obtain easements for operation of the transmission line on private and BLM lands, and would obtain ROW grants or permits to cross C-TNF and state lands. Existing non-forested land uses would not be expected to significantly change along the transmission line ROW as a result of construction of the North Alternative or South Alternative. However, the Project would add to the ongoing development of utility-related land uses in the project area. Based on the current land use within the project area, it is unlikely that changes in land use as a result of the Project would contribute to the cumulative impacts on land use in a meaningful way.

In areas of past mining disturbance along the South Alternative that are currently engaged in reclamation activities, construction of the transmission line could disrupt some activities. The South Alternative would also potentially limit the types of mining activities that could occur within the corridor due to safety and reliability issues related to the transmission line. The South Alternative would also cross portions of the Blackfoot Bridge Mine and the Husky-North Dry Ridge Mine, which are both proposed for mining. The siting and operation of the transmission line could limit proposed mining operations as mining would likely not be allowed within the transmission line corridor or access roads due to safety, accessibility, and reliability issues. However, based on the large amount of mineral lease areas available within the project area, it is unlikely that limiting mining operations within the South Alternative corridor would contribute to the cumulative impacts on land use in a meaningful way.

Recreation

Several recreational uses such as hiking, fishing, hunting, camping, and OHV use occur within the project area. Cumulative past and current activities, such as mining, agriculture, transportation and utility facility development, and residential and commercial development have limited recreation opportunities in some locations. BLM and C-TNF lands are managed under their respective plans, which include prescriptions to maintain recreational use. Current and reasonably foreseeable future mine development could contribute to a cumulative negative effect on recreational use through the introduction of additional evidence of human occupation in the area, disruption of wildlife, degraded viewsheds, and potential contamination. Cumulative residential and commercial development on private lands may also adversely affect hunting by occupying areas and restricting access for hunting and temporarily disturbing wildlife during construction. However, given the large size of public lands in the project area and the abundant recreational opportunities that currently exist, it is unlikely that continuation of current activities and future actions would markedly affect recreation in the area. The temporary disturbance during construction and the long-term presence of the North or South alternative ROW would not contribute in a meaningful way to cumulative impacts on recreation.

Visual Resources

Past and present actions, such as agriculture, mining, grazing, logging, and road and utility infrastructure, have resulted in cumulative changes to the natural landscape and visual resources within the project area. The changes include development of facilities for mining operations, establishment of agricultural uses and residential uses throughout the project area, development of infrastructure (such as roads and transmission lines) incident to human occupation, and clearing of forested areas.

Reasonably foreseeable future actions involving development and resource use would be expected to continue this trend. Changes in the visual landscape due to logging on C-TNF lands and agricultural uses on BLM and BIA lands are expected to continue into the future consistent with their resource management planning. On non-federal lands, continued rural development and agriculture will likely continue to shape the visual landscape. Mining will continue throughout the foreseeable future, which would result in cumulatively large areas of soil and vegetation clearing that would alter the viewshed.

The cumulative visual effect of the Project in combination with other past, present, and reasonably foreseeable actions would be highly dependent on viewpoint locations, the extent of existing visual modification that is already visible from a particular location, and the sensitivities of viewers. ROW and road clearing for the North and South alternatives would result in a cleared swath in forested areas, which would make the transmission line corridor more visible and open due to the removal of vegetation. Further, the addition of the transmission line on the landscape would introduce structures that would be slightly visible from public viewing areas. Residents in the Wayan area of the North Alternative would see portions of the cleared ROW and some structures. Some transmission line structures for the South Alternative would be visible from the few rural residences located along the Blackfoot River and Blackfoot River Road. Overall, the western portion of both alternatives would contribute incrementally, though in a relatively minor way, to potential cumulative visual impacts in that area, due to their location in an already developed area generally in the vicinity of existing transmission lines. However, the eastern portions of both alternatives would pass through more undeveloped areas and require new cleared ROWs. These portions of both alternatives thus would have the potential to have a relatively high level of contribution to cumulative visual impacts from vantage points along the transmission line ROW.

Vegetation

Past and present actions have resulted in cumulative changes to vegetative communities and special status plant species habitat within the project area. Agricultural conversion, mining, grazing, logging, and road and utility construction have substantially altered these native vegetative communities and habitat through removal and permanent conversion. In addition, proposed new mines would result in the removal and conversion of native vegetation communities in the mine footprint. These ongoing and reasonably foreseeable actions have the potential to result in continued cumulative loss and degradation of native vegetation communities within the project area. The North and South alternatives primarily would result in temporary impacts on sagebrush habitats and lands already converted to agricultural uses, but would also have some long-term impacts on forest vegetation. Relative to the scale of forest disturbance from other development in the area, the North Alternative and the South Alternative would only result in a small increase in the overall cumulative impact on vegetation communities.

Special status plant species may occur within the project area. Future development activities on C-TNF and BLM lands would be managed under their respective management plans. State-listed special status plant species are not provided with specific regulatory protection, but are considered during future state land management decisions. Damage to special status plant species may occur due to future activities occurring on private lands. There are no documented occurrences of any special status plants within 1 mile of the North or South alternative corridors, and botanical inventories conducted within the alternative corridors have not identified the presence of any special status plant species. Therefore, construction and operation of the Project would not contribute to cumulative impacts on special status species in the project area.

Past and present activities, such as agricultural activities, grazing, mine construction and operation, logging, and road construction have cumulatively resulted in the introduction and spread of noxious weeds. The spread of noxious weeds will continue with vegetation and soil disturbance during the implementation of ongoing and reasonably foreseeable actions. Soil and vegetation disturbance associated with the North and South alternatives would contribute to potential cumulative spread of noxious weed populations. However, the potential contribution of these alternatives would be minimized by project-related mitigation measures, such as revegetation measures. The Project thus would result in minor contributions to the potential cumulative impacts on noxious weed populations in the project area.

Geology and Soils

Erosion, compaction, decreased soil productivity, and loss of upland soils, prime farmland soils, and rock outcrops have occurred and continue to occur from natural weathering processes and from mining, livestock grazing, logging, residential and commercial development, and utility and road infrastructure. Similarly, this soil disturbance and loss in the project area will likely continue as these activities occur in the future. Through the implementation of mitigation measures described in Section 3.5, Geology and Soils, the Project would add a small quantity of soil compaction and erosion during construction and soil loss due to structure and access road placement. Overall, the Project's contribution to the cumulative soil compaction, erosion, and loss in the project area would be minor.

Water Resources, Floodplains, and Wetlands

Past and present activities that have cumulatively impacted surface and groundwater, floodplains, and wetlands within the project area include agricultural activities, mining, timber harvest, and road and utility construction and operation. Agriculture and livestock grazing that result in trampling of riparian vegetation, sedimentation, and decreases in water quality are prevalent throughout the Blackfoot and Willow watersheds. Logging in and around the C-TNF results in soil erosion that may enter nearby waters. Mines in the project area have a potential for runoff of sediment and contaminants into groundwater, waterbodies, and wetlands. Proposed and future mines coupled with future land development and ongoing agricultural uses and logging, could result in cumulative increases in vegetation removal; fertilizer, chemical, and manure inputs; soil compaction and erosion; and loss of wetland acreage and function. These actions could result in increased runoff of sediment and contaminates that enter into waterbodies and wetlands or leach into groundwater that could adversely affect water resources in the Blackfoot, Willow, and Salt watersheds.

Construction and operation of the North Alternative and South Alternative would contribute in a relatively minor way to potential cumulative sediment input and riparian and vegetation disturbance along surface waters and wetlands. Further, wetland fill associated with structures and access roads would have a minor contribution to cumulative wetland fill in the overall project area. Overall, based on the small quantity of riparian disturbance, sedimentation, and wetland fill, the Project would have a minor contribution to the overall cumulative impact on water resources.

Wildlife

Past and present actions have cumulatively resulted in extensive changes to wildlife habitats within the project area. Native vegetation communities have been substantially altered (though conversion, loss, or fragmentation) by agriculture, mining, grazing, timber harvest, and road and utility construction, and this in turn has resulted in the cumulative removal and permanent alteration of significant quantities of native wildlife habitat. Agricultural activities, grazing, and timber harvest are expected to continue within the project area in the foreseeable future. These ongoing and reasonably foreseeable future actions have the potential to result in the continuing cumulative loss and degradation of wildlife habitat. The North and South alternatives primarily would result in temporary impacts on sagebrush, grassland, and wetland habitats and lands already converted to agricultural uses, but would also have some long-term impacts on forested habitats. The temporary impacts on non-forested habitats and the long-term impacts on forested habitats would contribute to the overall cumulative loss and fragmentation of wildlife habitat in the project area.

The construction and operation of the North or South alternative would contribute incrementally to potential cumulative impacts on special-status wildlife species through short- and long-term habitat avoidance, incidental mortality, and habitat alteration in the alternative corridors. Because the amount of wildlife habitat impacted and the duration of wildlife disturbance by either the North or South Alternative would be minor compared to available habitat at a regional level, the construction and operation of either one of these alternatives would contribute little to cumulative impacts on special-status wildlife species at the regional level.

Big game winter ranges within the project area have been cumulatively degraded and/or altered by past and present land use activities including agricultural conversion, mining, grazing, timber harvest, energy infrastructure, and road construction, as well as through recreation and hunting pressures. Future projects within this winter range habitat could further fragment and degrade the habitat quantity and quality. A portion of both the North and South alternative corridors would cross big game winter range habitat and big game disturbance and habitat alteration would be minimized by avoiding construction during sensitive wintering periods. Any future development within the project area designated as big game winter range on federal lands would meet the standards of the appropriate land manager and/or resource management agency, which would minimize future impacts on federal lands. Overall, due to the low impact of the North and South alternatives on big game winter range, the Project would result in a minor contribution to cumulative disturbance and habitat fragmentation of winter habitat.

Fish Resources

Past and ongoing activities in the project area have cumulatively affected fish resources through degradation of water quality, direct disturbance of aquatic macroinvertebrates and fish, and alteration of riparian and instream cover. Runoff of sediment and contaminants such as selenium from past and present mining activities into area streams has contributed to these cumulative effects, adversely affecting aquatic habitat and associated fish resources. The extent of land reclamation varies from mine to mine, so the impacts on area streams varies depending on the measures implemented at each mine. Effects from livestock grazing, which cause eroded streambanks, reduced riparian vegetation, and heavy sedimentation, also cumulatively contribute to impacts on fish and fish habitat in grazing areas. Project stream crossings would have a low, temporary impact on fish and their habitat. Therefore, project impacts when combined with ongoing grazing activities, mining, agriculture, and other actions would have a small contribution on the overall cumulative impacts on fish resources in the project area.

Cultural

Cultural resources in Caribou County have been and are being cumulatively affected because of past and present development activities. Past actions that have impacted cultural resources include agricultural activities, highway and railroad construction, mining operations, construction of transmission lines, and commercial and residential development. Present and ongoing activities that alter the landscape and have the potential to affect cultural resources include agricultural activities, mining and logging operations, and operation and maintenance of existing power lines. Cumulative impacts associated with these activities include disturbance of cultural sites, reduction of the cultural integrity of certain sites, and removal of cultural artifacts. Construction of the North Alternative or South Alternative could contribute incrementally, albeit in a very minor way, to these cumulative impacts.

Although the Project would be implemented in such a way to avoid impacts on cultural resources there is the potential for impacts on previously undiscovered cultural resources or artifacts. Implementation of mitigation measures as described in Section 3.9, Cultural Resources, would lessen or avoid the potential for impacts on archaeological resources. However, the Project may still contribute incrementally to the adverse cumulative impact on cultural resources in the project area.

Socioeconomics

Past and present actions that have cumulatively affected socioeconomics, including population growth, taxes, and public services, in the project area include construction activities associated with mining, agriculture, logging, and road and utility construction. Additionally, the current economic downturn has contributed cumulatively to reduced employment opportunities, especially in the construction sector, and has influenced population migration. Reasonably foreseeable future actions that could cumulatively affect socioeconomics include ongoing agricultural activities, construction activities associated with new and existing mine expansion and development, road maintenance and construction, and the construction of the Gateway West Transmission Line.

Construction of the Project is expected to result in a temporary influx of construction workers to the project area and generate income for motels, hotels, and RV parks. There may be temporary shortages in hotel/motel and rental resources in Soda Springs and other small communities in Caribou County as the temporarily relocating workforce competes for local accommodations with workers involved in other construction activities that could occur simultaneously, including mining operation and development, and possibly the Gateway West Transmission Line. However, regional hotel/motel and rental accommodation resources in Pocatello and the surrounding region would be more than sufficient to accommodate the workers and families requiring temporary housing.

Impacts occurring to the local economy as a result of project-related expenditures, employment, and construction-related earning would be increased if construction of the mines were to coincide with the Project, but would still be low relative to the overall economy.

The Project would not be expected to cause significant demands on public services or facilities. During construction, public services such as police, fire, and medical facilities would be needed only in cases of emergency, which would likely be the case with other construction projects that could coincide in time with the Project.

Based on these considerations, construction of either the North or South alternatives would not be expected to result in a measurable contribution to overall cumulative socioeconomic impacts.

Transportation

Past and current activities in the project area result in cumulatively increased vehicle use of roadways and occasional road delays. Agricultural activities, mining, logging, and other development activities will continue to occur and expand in the project area; however, there are no identified specific projects that would combine with Project to result in cumulative impacts on transportation infrastructure within the immediate project area. In addition, while the transportation network and traffic in the area are likely to increase with future development and population growth, no major roadway construction or maintenance projects are planned during the construction phase of the North or South alternatives. Because both alternatives would result in only small, short-term increase in traffic during construction, significant traffic delays are not expected; therefore, it is expected that Project would not be a major contributor to cumulative transportation impacts.

Noise

Although implementation of past and present actions in the project area has resulted in some cumulative increase in longer-term noise levels, noise production is very location dependent, and the project area continues to enjoy relatively low noise levels on a continual basis. Past, current, and future actions that have or will create noise impacts through the operation of vehicles and equipment that produce noise in the project area include agricultural activities, development construction, mining, operation of existing energy infrastructure, road maintenance, and OHV vehicle use.

Cumulative noise impacts in the project area typically occur when noise receptors are exposed to noise from sources at about the same time, such as from vehicles, mining noise, and agricultural noise. There could be cumulative noise impacts if these actions are undertaken simultaneously and close to each other. Noise from construction activities during the construction phase of the North or South alternative would result in temporary increases in sound levels beyond ambient levels, including noise from helicopters and blasting that may be experienced by area residents up to 1 mile from construction activities. The Project thus could contribute incrementally to noise in the project area, which would likely result in a temporary and intermittent cumulative noise impacts.

Public Health

Past and present actions that have potentially affected public health and safety related to the increased risk of release and exposure of hazardous materials include mining development, agricultural use of herbicide and pesticides, and industrial activities. These actions are expected to continue into the future. Based on the CERCLA status of some of mine areas and potential impacts of the future mines that are developed in the area, the project area would experience increased potential for contamination and the mobilization of these contaminants in soils, surface waters, or groundwater. The North Alternative would not directly cross any identified contaminated areas or mineral lease blocks; therefore, it is not anticipated that the North Alternative would result in the mobilization of contaminants. The South Alternative would cross identified contaminated areas and proposed mine areas; therefore, there is the potential for mobilization of contaminants resulting in considerable contributions to the cumulative impacts on public health. Mitigation as described in Section 3.13.4 would reduce the potential for disturbance of contaminants by construction.

Although the both the North and South alternatives would result in higher levels of EMF under and immediately near the proposed transmission line, it would not cumulatively increase the overall level of EMF exposure in the project area.

Air Quality

The project area is currently designated as in attainment for all criteria pollutants under the Clean Air Act. Past and present actions that have cumulatively affected air quality include fires, mining, construction activities, residential wood burning, wildfires, and agricultural practices in the airshed, all of which are expected to continue for the foreseeable future. Ongoing and future mine development in the project area would generate fugitive dust, vehicle and equipment emissions, and processing plant emissions. In addition to mining activities, agriculture, vehicle traffic, logging activities, wildfires, and residential wood burning will also continue to contribute emissions and particulates, though at a smaller scale, throughout the year in the project area.

Air emissions from construction of the North and South alternatives would occur during the 16-month project construction period, spread over 2 years. Emissions from either alternative would result in a temporary contribution to cumulative impacts on air quality. Air impacts from the either alternative over the long term would occur, but would be much lower than those experienced during construction. Overall, the Project's emissions would result in a small contribution to cumulative impacts on air quality, compared to the larger-scale emitters in the project area.

Greenhouse Gases

Cumulative GHG concentrations in the atmosphere and corresponding climate change occurring over the past 50 years have been primarily caused by anthropogenic contributions. GHG emissions have largely originated from burning fossil fuels and clearing forests around the world from many and varied sources during this time, as well as for a significant period before that (Karl et al. 2009). Therefore, unlike the cumulative impacts analyses for other resources discussed in this section, the global nature of GHGs makes cataloguing past, present, and reasonably foreseeable future actions for this resource impossible.

Nonetheless, in a general sense, any action where fossil fuels have been or are being burned contributes to GHG concentrations. Examples of such actions include home heating, automobile and other vehicle use, electricity generation, processing and manufacturing of goods, and wood burning activities, among others. In addition, actions that result in the disturbance of soil or loss of vegetation can also increase concentrations. Vegetation can affect concentrations in two ways. First, if vegetation is removed prior to maturation, the carbon storing potential is lost and CO_2 can no longer be sequestered in that vegetation. Second, if that vegetation is burned, it will release all of the carbon it has sequestered back into the atmosphere as CO_2. These actions have occurred in the past, are likely still occurring, and will continue to occur in the future at some unknown level.

In 2005, the United States emitted 7,204.2 million metric tons of CO_2e (EPA 2012b), while the state of Idaho emitted 37.2 million metric tons of CO_2e, or approximately 0.5 percent of total U.S. emissions (Strait et al. 2008). In 2010, the United States emitted 6,821.8 million metric tons of CO_2e (EPA 2012b), while the state of Idaho was projected to emit 39.6 million metric tons of CO_2e, based on historical data from 1990 through 2005 (Strait et al. 2008). Strait et al. 2008 suggest that Idaho's gross GHG emissions (emissions excluding carbon sinks, such as agricultural soils) are rising faster than those of the nation as a whole. Idaho's gross GHG emissions increased 31 percent from 1990 to 2005, while national emissions rose by only 16 percent from 1990 to 2004.

In terms of the cumulative impacts on levels of atmospheric GHGs, any addition, when considered globally, could contribute to long-term significant effects to climate change. As described above, the impacts of the North and South alternatives on GHG concentrations would be low. Therefore, the concentrations estimated for the Project, when compared to the regional, national, and global rates, are negligible and comparatively insignificant.

3.17 Intentional Destructive Acts

Intentional destructive acts, that is, acts of sabotage, terrorism, vandalism, and theft sometimes occur at power utility facilities. Vandalism and thefts are most common, especially of metal and other materials that can be sold. BPA has seen a significant increase in metal theft from its facilities over the past few years. Thefts increase when the price of metal is high on the salvage market. In the last 10 years, BPA has experienced over 200 thefts or burglaries. The conservative estimate of damages for these crimes is $150,000, but the actual amount is likely much higher since this number does not factor in all labor-related costs associated with repairing the damage.

The impacts from vandalism and theft, though expensive, do not generally cause a disruption of service to the area. Stealing equipment from electrical substations, however, can be extremely dangerous. Nationwide, many thieves have been electrocuted while attempting to steal equipment from energized facilities. Recent examples include the July 2011 electrocution death of a man attempting to steal copper from a Duke Energy substation in South Carolina, the August 2011 electrocution death of a man attempting to steal copper from an Entergy substation in Louisiana, the August 2011 severe burning of a woman attempting to steal copper from a Puget Sound Energy substation in Washington, the October 2011 electrocution death of a man attempting to steal copper from a Duke Energy substation in North Carolina, and the December 2011 electrocution death of a man attempting to steal copper from a Memphis Light Gas & Water substation in Tennessee.

Federal and other utilities use physical deterrents such as fencing, cameras, warning signs, rewards, etc., to help deter theft, vandalism, and unauthorized access to facilities. BPA also is in the process of replacing much of its solid copper wire with copper-coated steel wire, posting signage that indicates a trade has been made, and installing surveillance cameras to deter future break-ins. Transmission towers and overhead transmission conductors, however, are mostly on unfenced utility ROWs. Although towers are constructed on footings in the ground and are difficult to dislodge, they remain vulnerable to potential vandalism. In an effort to help prevent intentional destructive acts, through its Crime Witness Program, BPA offers up to $25,000 for information that leads to the arrest and conviction of individuals committing crimes against BPA facilities. Anyone having such information can call BPA’s Crime Witness Hotline at (800) 437-2744. The line is confidential, and rewards are issued in such a way that the caller’s identity remains confidential.

Acts of sabotage or terrorism on electrical facilities in the Northwestern United States are rare, though some have occurred. These acts generally focused on attempts to destroy large transmission line steel towers. For example, in 1999, a large transmission line steel tower in Bend, Oregon, was toppled. Depending on the size and voltage of the line, destroying towers or other equipment could cause electrical service to be disrupted to utility customers and end-users. The effects of these acts would be as varied as those from the occasional sudden storm, accident, or blackout and would depend on the particular configuration of the transmission system in the area. While in some situations these acts would have no noticeable effect on electrical service, in other situations, service could be disrupted in the local area, or if the damaged equipment was part of the main transmission system, a much larger area could be left without power.

When a loss of electricity occurs, all services provided by electrical energy cease. Illumination is lost. Lighting used by residential, commercial, industrial, and municipal customers for safe locomotion and security is affected. Residential consumers lose heat. Electricity for cooking and refrigeration is also lost, so residential, commercial, and industrial customers cannot prepare or preserve food and perishables. Residential, commercial, and industrial customers experience comfort/safety and temperature impacts, increases in smoke and pollen, and changes in humidity, due to loss of ventilation. Mechanical drives stop, causing impacts as elevators; food preparation machines; and appliances for cleaning, hygiene, and grooming are unavailable to residential customers. Commercial and industrial customers also lose service for elevators, food preparation, cleaning, office equipment, heavy equipment, and fuel pumps unless they have heavy-duty backup generators. In addition, roadways experience gridlock where traffic signals fail to operate. Mass transit that depends on electricity, such as light rail systems, can be impacted. Sewage transportation and treatment can be disrupted.

In some situations, intentional destructive acts would have no noticeable effect on electrical service as power can be rerouted around an area because of redundancies built into the transmission system. In other situations, service could be disrupted in the local area, or, if an intentional destructive act caused damage to a major piece of transmission system equipment or a large part of the transmission system, a much greater area could be left without power.

It is difficult to predict the likelihood of an increased risk for, terrorist or sabotage acts. However, given the extensive security measures that BPA, public and private utilities, energy resource developers, and federal agencies such as the U.S .Department of Homeland Security have and are continuing to implement to help prevent such acts and protect their facilities, along with the inherent difficulty in significantly affecting such large and well-constructed facilities as transmission towers and substation sites, it is considered extremely remote and unlikely that a significant terrorist or sabotage act would occur. If such acts did occur, the problem area would be isolated quickly and electricity rerouted as much as possible to keep the system functioning. In addition, it is expected that federal, state, and local agencies would respond quickly if any such act posing any human or natural resource risks occurs.

3.18 Irreversible or Irretrievable Commitment of Resources

Irreversible commitments of resources occur when a nonrenewable resource, such as minerals or petroleum-based fuels, is used for the construction or operation of a proposed project. Irretrievable commitments of resources cause the lost production or use of renewable resources such as timber or rangeland.

The North and South alternatives would consume aluminum, steel, other metals, wood, gravel, sand, plastics, and various forms of petroleum products in the construction of the transmission line, substations, and development and improvement of access roads. Most of these materials are not renewable and could potentially be irreversible commitments of resources if not recycled (metals and glass) or reused (sand and gravel) at the end of the project life. The land taken out of agricultural production for the Hooper Springs Substation would also be irreversible. The substation at Lanes Creek for the North Alternative would occur on an already developed site.

Irretrievable commitments would include small amounts of land lost to grazing and crop production. In addition, timberlands within C-TNF would be lost as a result of the ROW construction and maintenance. These commitments are irretrievable rather than irreversible because management direction could change and allow these uses in the future.

3.19 Relationship between Short-term Uses of the Environment and Long-term Productivity

The Project would not pose impacts that would significantly alter the long-term productivity of the affected environment. Although there would be some minimal reduction in available areas for farming and grazing as a result of structure placement and substation development, given the widespread agricultural and grazing uses in the area the loss would be negligible. There would also be some reduction in timberlands in C-TNF; however, the area of impact is small compared to overall forest production. Therefore, there would be no meaningful reduction in long-term productivity.

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4 Consultation, Review, and Permit Requirements

This chapter addresses federal statutes, implementing regulations, Executive Orders, and other consultation, review, and permit requirements potentially applicable to the Project. This draft EIS is being sent to Tribes, federal agencies, and state and local governments as part of the consultation for the Project.

4.1 National Environmental Policy Act

This EIS has been prepared by BPA pursuant to regulations implementing NEPA (42 U.S.C. 4321 et seq.), which requires federal agencies to assess, consider, and disclose impacts that their actions may have on the environment. BPA has assessed the potential environmental effects of the Project in this EIS and has made this EIS available for public comment. It will consider impacts and public comments when making decisions regarding whether to proceed with the Project.

4.2 Endangered Species Act of 1973

The Endangered Species Act (ESA) of 1973 (16 U.S.C. 1536), as amended in 1988, establishes a national program for the conservation of threatened and endangered species of fish, wildlife, and plants and the preservation of the ecosystems on which they depend.

ESA is administered by USFWS for wildlife and freshwater species and by the National Oceanic and Atmospheric Administration (NOAA) Fisheries Service for marine and anadromous species. ESA defines procedures for listing species, designating critical habitat for listed species, and preparing recovery plans. It also specifies prohibited actions and exceptions.

Section 7(a) of ESA requires federal agencies to ensure that the actions they authorize, fund, and carry out do not jeopardize endangered or threatened species or their critical habitats. Section 7(c) of ESA and the federal regulations on endangered species coordination (50 C.F.R. 402.12) require that, if listed species or designated critical habitat are present and could be affected by a project, a federal agency must prepare a biological assessment to analyze the potential effects on listed species and critical habitat and make an effect determination for each species. USFWS and/or NOAA Fisheries Service review the biological assessment and, if they conclude that the action may adversely affect a listed species or its habitat, issue a biological opinion, which includes a take statement and a list of reasonable and prudent alternatives to follow during construction. If USFWS and/or NOAA Fisheries Service find that the Project may affect, but is not likely to adversely affect a listed species or its habitat, they would issue a letter of concurrence.

BPA obtained a list of ESA-listed species potentially present in Caribou County in spring 2011, summer 2012, and December 2012. Four species were listed as threatened or candidate species in the county, including, Canada lynx (threatened), wolverine (candidate), greater sage grouse (candidate), and whitebark pine (candidate). No critical habitat has been designated in Caribou

County. Field surveys of the North and South alternative corridors conducted during spring and summer of 2011 and summer 2012 did not document evidence that the four species were present. Additional surveys will be conducted in 2013 of the North and South alternative corridors. Field surveys did identify potential suitable foraging habitat for Canada lynx on C-TNF lands. With the exception of an unconfirmed wolverine sighting on private lands southwest of C-TNF, no other threatened or candidate species have been documented as occurring within 2 miles of either the North or South alternative corridors.

Based on informal consultation with USFWS during the preparation of this EIS, it was determined that Canada lynx are not present along the North or South alternative corridors; therefore, the Project would have no effect on ESA-listed species. Potential impacts on the ESA-designated species and associated mitigation measures are discussed further in Sections 3.4, Vegetation, and 3.7, Wildlife.

4.3 Fish and Wildlife Conservation Act of 1980

The Fish and Wildlife Conservation Act of 1980 (16 U.S.C. 2901 et seq.) encourages federal agencies to conserve and promote the conservation of nongame fish and wildlife species and their habitats. The Fish and Wildlife Coordination Act (16 U.S.C. 661 et seq.) requires federal agencies undertaking projects affecting water resources to consult with USFWS and the state agency responsible for fish and wildlife resources, which, for this project would be IDFG.

No federally threatened or endangered species would be impacted by the North Alternative or South Alternative. Populations of Yellowstone cutthroat trout, which is considered a special status species by IDFG, exist in the Blackfoot Reservoir and Blackfoot River. The North and South alternatives would not result in major impacts on water resources. Further, BPA has consulted with IDFG and incorporated recommendations to avoid and minimize potential impacts on Yellowstone cutthroat trout. Standard erosion control measures would be used during construction to control sediment movement into streams, protecting water quality and fish habitat. Mitigation designed to avoid and minimize impacts on fish and wildlife and their habitats is discussed in further detail in Sections 3.4, Vegetation; 3.7, Wildlife; and 3.8, Fish.

4.4 Migratory Bird Treaty Act of 1918

The Migratory Bird Treaty Act implements various treaties and conventions between the United States and other countries, including Canada, Japan, Mexico, and the former Soviet Union, for the protection of migratory birds (16 U.S.C. 703-712, July 3, 1918, as amended 1936, 1960, 1968, 1969, 1974, 1978, 1986, and 1989). Under the Act, taking, killing, or possessing migratory birds or their eggs or nests is unlawful. Most species of birds are classified as migratory under the Act, except for upland and nonnative birds such as pheasant, chukar, gray partridge, house sparrow, European starling, and rock dove.

The North or South alternatives may impact migratory birds through disturbance, injury, or mortality from tree clearing and habitat removal during ROW clearing and access road development, and through the increased potential for power line collisions during transmission line operation. Potential impacts on migratory birds and mitigation measures are discussed in Section 3.7, Wildlife. In accordance with the Memorandum of Understanding signed in 2006 between USFWS and DOE, BPA will consult with USFWS to ensure appropriate mitigation measures would be employed to minimize the risk of bird mortality and help promote the conservation of migratory bird populations.

4.5 Bald Eagle and Golden Eagle Protection Act of 1940

The BGEPA of 1940 prohibits the taking or possessing of and commerce in bald and golden eagles, with limited exceptions (16 U.S.C. 668-668d, June 8, 1940, as amended 1959, 1962, 1972, and 1978). The Act only covers intentional acts or acts in "wanton disregard" of the safety of bald or golden eagles.

Because eagles use areas near both the North and South alternative corridors for foraging, perching, roosting, and possibly nesting, there is a possibility that some incidental, unintentional mortality could result to bald and/or golden eagles over the life of the Project. However, because BGEPA only applies to intentional acts or acts in wanton disregard of the safety of bald or golden eagles, any such mortality would not be subject to this act. For further discussion regarding potential impacts on eagles and associated mitigation, see Section 3.7, Wildlife.

4.6 Noxious Weed Control

The Federal Noxious Weed Act of 1974, as amended in 2009, sets out regulations for the control and management of non-indigenous weeds that injure or have the potential to injure the interests of agriculture and commerce, wildlife resources, or the public health (7 U.S.C. Sections 2801-2814, January 3, 1975, as amended 1988, 1994). The Act requires federal agencies to develop management programs to control undesirable plants on federal lands under each agency's jurisdiction. Undesirable plant species are defined as those that are classified as undesirable, noxious, harmful, exotic, injurious, or poisonous, pursuant to state or federal law. A noxious weed list (7 C.F.R. 360.200) is developed by the Secretary of Agriculture, which lists noxious weeds (as defined by the Plant Protection Act) that are subject to restrictions on interstate movement (7 U.S.C. 7712).

Idaho Code (Title 22, Chapter 24, Noxious Weeds) designates 64 species of noxious weeds. This law is implemented by administrative rules established under the Idaho Administrative Procedures Act (IDAPA) (IDAPA 02, Title 06, Chapter 22, Noxious Weed Rules). The administrative rules place each noxious weed species into one of three categories. Each category has specific management requirements associated with detection, control, and/or containment of the given species. The categories are as follows:

- Early Detection and Rapid Response—Plants in this category must be reported to the Idaho State Department of Agriculture within 10 days of observation. Eradication must begin in the same season in which the weed is found.
- Statewide Control—Plants in this category may already exist in some parts of the state. In some areas of the state, control or eradication may be possible, and a plan must be established that will reduce population levels within 5 years.

- Statewide Containment—Plants in this category already exist in the state. New or small infestations can be reduced or eliminated, while established populations may be managed as determined by the local weed control authority.

Two noxious weed species have been documented within the North Alternative corridor: Canada thistle and leafy spurge, both of which are classified as statewide containment species in Idaho. Three noxious weed species have been documented within the South Alternative corridor: musk thistle, which is an Idaho Control status species, and Canada thistle and leafy spurge, both of which are classified as statewide containment species in Idaho.

Construction and maintenance activities would create some risk of spreading undesirable plant species along the North and South alternative corridors. BPA would conduct post-construction surveys for undesirable plant species included on the federal noxious weed lists and on state of Idaho and Caribou County lists. If noxious weed species are found or spread as a result of transmission line construction or maintenance, BPA would coordinate with the state, county, and/or landowner(s) regarding their control or eradication (BPA 2000). See Section 3.4, Vegetation, for a detailed discussion of noxious weed species, impacts, and mitigation measures.

4.7 Clean Air Act

The Clean Air Act as revised in 1990 (PL 101-542, 42 U.S.C. 7401) requires EPA and the states to carry out programs intended to ensure attainment of NAAQS. EPA is authorized to establish air quality standards for six "criteria" air pollutants: carbon monoxide, lead, nitrogen dioxide, ozone, particulate matter ($PM_{2.5}$, PM_{10}), and sulfur dioxide. EPA uses these six criteria pollutants as indicators of air quality. EPA has established NAAQS for each criteria pollutant, which define the maximum legally allowable concentration. If the NAAQS for a pollutant is exceeded, adverse effects on human health may occur. When an area exceeds these standards, it is designated as a nonattainment area. Pollution control measures are mandated for federal actions in nonattainment areas.

A nonattainment area can be listed for any of the criteria pollutants. An area that was once a nonattainment area, but has since improved its air quality enough so that it now meets EPA established air quality standards, is upgraded to a maintenance area designation. Maintenance areas also have pollution controls imposed on them, but because the air quality is not as poor as in nonattainment areas, the control standards are not as strict. All other areas not listed by EPA for air quality degradation are considered attainment areas. The General Conformity Requirements of the C.F.R. require that federal actions do not interfere with state programs to improve air quality in nonattainment areas. General Conformity Requirements do not apply to the Project because it is located in an attainment area.

Idaho has adopted the federal air quality standards in the Rules for the Control of Air Pollution in Idaho (IDAPA 58.01.01.575-587). Project construction activities that could create dust include road building and grading, on-site travel on unpaved surfaces, work area clearing and preparation, and soil disrupting operations. Heavy equipment and vehicles, including those with diesel internal combustion engines, would emit pollutants such as carbon monoxide, carbon dioxide (CO_2), sulfur oxides, PM, nitrogen oxides, and other air toxins. The air quality impacts of the North and South alternatives are expected to be short term and low, and mitigation measures would be implemented to minimize these air quality impacts. Air quality impacts and related mitigation measures are discussed in Section 3.14, Air Quality.

4.8 Greenhouse Gases

Executive Orders 13423 and 13514 require federal agencies to measure, manage, and reduce GHG emissions by agency-defined target amounts and dates. In 2010, BPA began implementing a Sustainability Action Plan, which addresses managing and reducing GHG emissions by the agency. In addition, the 2010 draft guidance by CEQ describes two primary ways to consider climate change in planning and compliance documents. The first is the agency's contribution to climate change through the release of GHGs. The second approach to considering climate change is in considering the effects that a changing environmental baseline, as a result of changes in climate, has on the Project. In its recent draft guidance, CEQ relies on 40 C.F.R. 1502.24 when it states that "[w]ith regard to the effects of climate change on the design of a project and alternatives, Federal agencies must ensure the scientific and professional integrity of their assessment of the ways in which climate change is affecting or could affect environmental effects of the project" (CEQ 2010).

Both the North Alternative and South Alternative would remove trees and other vegetation that collect, or "sequester", carbon in the form of atmospheric CO_2, and would involve the use of construction vehicles and equipment that would generate emissions of gases such as CO_2 that contribute to global warming. The removal of vegetation under the North Alternative would result in lost carbon storage equivalent to 6,747 metric tons of CO_2, while lost carbon storage from vegetation removal under the South Alternative would be equivalent to 3,685 metric tons of CO_2. Construction of the North Alternative would produce an estimated 12,244 metric tons of GHG emissions over the course of 1 year, and operation and maintenance of the transmission line would be expected to produce about 126 metric tons over the life of the transmission line. Construction of the South Alternative would produce an estimated 8,081 metric tons of GHG emissions over the course of 1 year, and 84 metric tons over the life of the transmission line. These emissions under either alternative would be well beneath EPA's mandatory reporting threshold of 25,000 metric tons of CO_2e GHG emissions per year. Based on these estimates, the Project's contribution to GHG levels in the atmosphere would be ***low***. See Section 3.15, Greenhouse Gas Emissions, for the complete analysis and discussion.

The construction of the transmission line would not be impacted by climate change or any corresponding effects related to changes in the resources evaluated in this EIS given the short 2 year construction schedule. The operation and maintenance of the transmission line could be affected by climate change, though the actual impacts are remote and speculative and would mostly correspond to changes in the underlying natural and socioeconomic resources considered in this EIS. For example, increased extreme weather events could result in flooding and erosion potentially affecting transmission line structures. Fire regimes may change, increasing the risk of forest fires. Federal land managers near the North and South alternative corridors (BIA, BLM, and C-TNF) may see changes in vegetation, wildlife, water resources, and fisheries that could alter how they manage the lands; however, it is unlikely the operation and maintenance of the transmission line would be substantially affected. For additional information on the impacts of climate change on project facilities, see Section 3.15, Greenhouse Gas Emissions.

4.9 Clean Water Act

The Federal Water Pollution Control Act, popularly known as the Clean Water Act (33 U.S.C. 1251 et seq.), regulates discharges into waters of the United States. Implementation of the Project may require a permit pursuant to the Clean Water Act as regulated by USACE for the placement of fill material and the potential disturbance of wetlands and other waters of the United States. Requirements for implementation of the Clean Water Act in Idaho are described below.

Section 401 (33 U.S.C. 1341 et seq.) certification is required for any permit or license issued by a federal agency for any activity that may result in a discharge into waters of the state, to ensure that the Project will not violate state water quality standards. Pursuant to the provisions of Section 401(a)(1) of the Clean Water Act, as amended, 33 U.S.C. 1341(a)(1), and Idaho Code 39-101 et seq., and 39-3601 et seq., the Idaho Department of Environmental Quality has authority to review Section 404 permits and issue water quality certification. Any Section 401 certification in Idaho also ensures that the Project would comply with water quality improvement plans developed for affected water bodies and that the Project would not adversely impact water quality impaired streams (streams that already do not meet water quality standards).

Section 402 of the Clean Water Act (33 U.S.C. 1342 et seq.) authorizes stormwater discharges associated with industrial activities under the National Pollutant Discharge Elimination System. For Idaho, EPA has a Construction General Permit authorizing federal facilities to discharge stormwater from construction activities disturbing land of 1 acre or more into waters of the United States, in accordance with various set conditions. BPA would develop a Stormwater Pollution Prevention Plan (SWPPP) during final project design, which would be adapted by the contractor prior to construction, and revised onsite as necessary. A copy of the SWPPP is maintained onsite during construction and is a basis for environmental compliance inspection during construction.

Section 404 requires authorization from USACE when there is a discharge of dredged or fill material into waters of the United States, which include wetlands. The basic premise of Section 404 is that dredged or fill material cannot be discharged into water if the nation’s waters would be significantly degraded or if a feasible alternative exists that is less damaging to the aquatic environment. As discussed in Section 3.6, Water Resources, Floodplains, and Wetlands, construction of the North Alternative would result in approximately 0.05 acre of short-term impacts from vegetation removal and temporary fill, and permanent fill resulting in approximately 1.1 acres of long-term, direct impacts on wetlands. However, the 1.1 acres of impacts are spread across 12 discrete wetlands, with no impacts greater than 0.5 acre in any given wetland. Construction of the South Alternative would result in approximately 0.08 acre of short-term impacts on wetlands and approximately 0.03 acre of long-term, direct impacts on one wetland. BPA would apply for a Section 404 permit and coordinate with USACE concerning the Project and its potential effects on waters of the United States.

4.10 Floodplains and Wetlands (Executive Orders 11988 and 11990)

DOE mandates that effects on floodplains and wetlands be assessed and alternatives for protection of these resources be evaluated in accordance with Compliance with

Floodplain/Wetlands Environmental Review Requirements (10 C.F.R. 1022.12), and federal Executive Orders 11988 (Floodplain Management, May 24, 1977; 42 FR 26951) and 11990 (Protection of Wetlands, May 24, 1977; 42 FR 26961). In accordance with these regulations, BPA has prepared an assessment of effects of the Project on floodplains and wetlands. This evaluation serves as the notice of floodplain/wetlands involvement for the Project. For the assessment of effects see Section 3.6, Water Resources, Floodplains, and Wetlands.

No new construction would occur in floodplains. The proposed transmission line would span the floodplains of the Blackfoot River and other waterbodies. Wetlands within the North and South alternatives' ROWs are associated with the Blackfoot River, smaller drainages, and topographic depressions. Both the North and South alternatives have been sited to avoid wetlands to the maximum extent practicable. BPA also would implement appropriate mitigation to avoid, minimize, and compensate for any wetland impacts. Construction, operation, and maintenance of the Project are not expected to significantly affect the long-term existence, quality, or natural functioning of wetlands. Potential impacts on wetlands are discussed above in Section 4.9. There are no wetlands present at the proposed Hooper Springs or Lanes Creek Substation sites. Effects on floodplains, and wetlands and associated mitigation measures are discussed in the Section 3.6, Water Resources, Floodplains, and Wetlands.

4.11 Rivers and Harbors Act of 1899

Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) regulates all work done in or structures placed below the ordinary high water mark of navigable waters of the United States. No work associated with the Project would occur in navigable water bodies. The North and South alternatives include conductors that would span the navigable waters of the Blackfoot River. Overhead utility lines constructed over Section 10 waters would require a Section 10 permit.

4.12 Wild and Scenic Rivers Act

Section 4(d) of the National Wild and Scenic Rivers Act (16 U.S.C. 1271-1287) requires that "In all planning for the use and development of water and related land resources, consideration shall be given by all federal agencies involved to potential national wild, scenic and recreational river areas." NRI is managed by the Rivers, Trails, and Conservation Assistance Program of the National Park Service. In partial fulfillment of the Section 5(d) requirements, the National Park Service has compiled and maintains a NRI, a registry of river segments that potentially qualify as national wild, scenic or recreational river areas.

CEQ provides guidance to federal agencies with permitting and/or granting authority for projects on or near rivers listed on the NRI. In accordance with a 1979 presidential directive, all federal agencies shall, as part of their normal planning and environmental review process, take care to avoid or mitigate adverse effects on rivers identified on the NRI. In accordance with these requirements, BPA has prepared an assessment to determine whether the North or South alternatives could affect an NRI segment.

The Blackfoot River from its source to the slack water of the Blackfoot Reservoir (32 miles) is listed on the NRI as potentially eligible for listing under the Wild and Scenic Rivers Act because of its scenic and fisheries resources. BPA would coordinate with the National Park Service to evaluate effects relative to the Blackfoot River NRI segment. Project-related impacts on the Blackfoot River are described in Section 3.6, Water Resources, Floodplains, and Wetlands.

4.13 Hazardous Materials and Pollution Control

4.13.1 Safe Drinking Water Act

The Safe Drinking Water Act (42 U.S.C. 200f et seq.) protects the quality of public drinking water and its source. BPA would comply with state and local public drinking water regulations. The Project would not affect any sole source aquifers or other critical aquifers, or adversely affect any surface water supplies (IDEQ 2011b).

4.13.2 Spill Prevention Control and Countermeasures Act

The Spill Prevention Control and Countermeasures Act is intended to prevent discharge of oil into navigable waters of the United States or adjoining waterbodies. Facilities subject to the Act must prepare and implement a plan to prevent any discharge of oil into or upon navigable waters or adjoining shorelines. The plan is called a Spill Prevention, Control, and Countermeasure Plan.

In BPA's experience, typical construction and maintenance activities have generated small amounts of these hazardous wastes: solvents, pesticides, paint products, motor and lubricating oils, and cleaners. Small amounts of hazardous wastes may be generated by the Project. These materials would be disposed of according to state law and the Resource Conservation and Recovery Act (RCRA). As detailed in Section 3.13, Public Health and Safety, BPA would prepare and implement Spill Prevention and Response Procedures that would include notification procedures, to prevent and contain accidental spills.

4.13.3 Resource Conservation and Recovery Act

RCRA, as amended, is designed to provide a program for managing and controlling hazardous waste by imposing requirements on generators and transporters of this waste, and on owners and operators of treatment, storage, and disposal facilities. Each treatment, storage, and disposal facility owner or operator is required to have a permit issued by EPA or the state. Typical construction and maintenance activities, in BPA's experience, have generated small amounts of these hazardous wastes: solvents, pesticides, paint products, motor and lubricating oils, and cleaners. Small amounts of hazardous wastes may be generated by the Project. These materials would be disposed of according to state law and RCRA.

4.13.4 Toxic Substances Control Act

The Toxic Substances Control Act is intended to protect human health and the environment from toxic chemicals. Section 6 of the Act regulates the use, storage, and disposal of polychlorinated biphenyls (PCBs). BPA adopted guidelines to ensure that PCBs are not introduced into the environment. Equipment used for the Project would not contain PCBs. Any equipment removed from the project area that may contain PCBs would be handled according to the disposal provisions of this Act.

4.13.5 Federal Insecticide, Fungicide and Rodenticide Act

The Federal Insecticide, Fungicide and Rodenticide Act registers and regulates pesticides. BPA uses herbicides (a kind of pesticide) only in a limited fashion and under controlled circumstances. Herbicides are used on transmission line ROWs and in substation yards to control vegetation, including noxious weeds. When BPA uses herbicides, the date, dose, and chemical used are recorded and reported to state government officials. Herbicide containers are disposed of according to RCRA standards.

4.13.6 Comprehensive Environmental Response, Compensation, and Liability Act

CERCLA (commonly known as Superfund), was enacted by Congress on December 11, 1980, to establish prohibitions and requirements concerning closed and abandoned hazardous waste sites, provide for liability of persons responsible for releases of hazardous waste at these sites, and establish a trust fund to provide for cleanup when no responsible party could be identified.

As discussed in Section 3.13, there are several sites associated with past and current mining activities and either under investigation or already designated as a Superfund site that exist within Caribou County. The closest mine with CERCLA implications to the North Alternative corridor is the Henry Mine, which operated from 1969 to 1989. The Henry Mine is located approximately 1 mile southeast of the town of Henry, Idaho, and approximately 3,500 feet east of the North Alternative corridor. P4 Production, LLC is under an EPA Agreed Order for a remedial investigation and feasibility study of the Henry Mine.

As discussd in Section 3.13, four mines are crossed by the South Alternative corridor including the Conda/Woodall Mountain, Ballard, Wooley Valley, and North Maybe mines. All of these mines are currently undergoing investigation as potential Superfund sites under CERCLA. The South Alternative corridor also crosses two proposed phosphate mines including the Blackfoot Bridge Mine and the Husky-North Dry Ridge Mine.

If BPA discovers hazardous material, toxic substance, or petroleum products that may pose an immediate threat to human health or the environment, BPA requires that the contractor notify BPA immediately. Other conditions such as large dump sites, drums of unknown substances, suspicious odors, stained soil, etc., must also be reported immediately to BPA. In these situations, the contractor would not be allowed to disturb such contaminants until BPA conducts appropriate investigation and notifies appropriate authorities.

4.14 Cultural Resources

Regulations established for the management of cultural resources include:

- Antiquities Act of 1906 (16 U.S.C. 431-433);
- Historic Sites Act of 1935 (16 U.S.C. 461-467);
- Section 106 of the NHPA of 1966 (16 U.S.C. 470 et seq.), as amended;
- Archaeological Data Preservation Act of 1974 (16 U.S.C. 469 a-c);

- Archaeological Resources Protection Act of 1979 (16 U.S.C. 470 et seq.), as amended;
- Native American Graves Protection and Repatriation Act (25 U.S.C. 3001 et seq.); and
- Executive Order 13007 Indian Sacred Sites.

Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties, and afford the Advisory Council on Historic Preservation a reasonable opportunity to comment. Historic properties are properties that are included in the NRHP or that meet the criteria for the National Register. If a federal agency plans to undertake a type of activity that could affect historic properties, it must consult with the appropriate State Historic Preservation Officer (SHPO) and/or Tribal Historic Preservation Officer to make an assessment of adverse effects on identified historic properties.

NHPA amendments specify that properties of traditional religious and cultural importance to a Native American Tribe (also known as Traditional Cultural Properties) may be determined to be eligible for inclusion on the National Register of Historic Places (NRHP). In carrying out its responsibilities under Section 106, BPA would be required to consult with any Native American Tribe that attaches religious and cultural significance to any such properties. The Native American Graves Protection and Repatriation Act requires consultation with appropriate Native American Tribal authorities prior to the excavation of human remains or cultural items (including funerary objects, sacred objects, and cultural patrimony) on federal lands or for projects that receive federal funding. The NHPA recognizes Native American ownership interests in some human remains and cultural items found on federal lands and makes the sale or purchase of Native American human remains illegal, whether or not they derive from federal or Indian land. Repatriation, on request, to the culturally-affiliated Tribe is required for human remains.

Executive Order 13007 addresses Native American sacred sites on federal and Tribal land. Sacred site means any specific, discrete, narrowly delineated location on federal land that is identified by a Tribe, or Tribal individual determined to be an appropriately authoritative representative of a Native American religion. The site is sacred by virtue of its established religious significance to, or ceremonial use by, a Native American religion; provided that the Tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site. This order calls on agencies to do what they can to avoid physical damage to such sites, accommodate access to and ceremonial use of Tribal sacred sites, facilitate consultation with appropriate Native American Tribes and religious leaders, and expedite resolution of disputes relating to agency action on federal lands.

BPA sent a letter describing the Project and Area of Potential Effect to the SHPO and consulting Tribes in June 2011. An updated letter was sent to consulting parties in September 2012. Section 3.9, Cultural Resources, further discusses cultural resources along the North and South alternative corridors, potential impacts associated with each alternative, and mitigation measures to protect archaeological and historic resources.

4.15 Farmlands Protection Policy Act

The Farmland Protection Policy Act (7 U.S.C. 4201 et seq.) directs federal agencies to identify and quantify adverse impacts of federal programs on farmlands. The Act's purpose is to minimize the number of federal programs that contribute to the unnecessary and irreversible conversion of agricultural land to nonagricultural uses. The Act attempts to ensure that federal programs are administered in a manner that, to the best extent practicable, will be compatible with state, local government, and private programs and policies to protect farmland.

The Farmland Protection Policy Act designates farmland as prime, unique, of statewide importance, and of local importance based on their soil characteristics. Less than 0.01 acre of prime farmland soils would be affected by the North Alternative (see Section 3.1, Land Use, and Section 3.5, Geology and Soils). The South Alternative would impact approximately 6.6 acres of prime farmland.

4.16 Caribou-Targhee National Forest Revised Forest Plan

The CNF RFP establishes forest-wide goals, objectives, standards, and guidelines for land and resource management, as well as goals, objectives, standards, and guidelines applicable to individual management prescriptions. Under the National Forest Management Act, consistency with these goals, objectives, standards, and guidelines must be demonstrated prior to project approval (16 U.S.C. 1604[i] and 36 C.F.R. 219.10[e]). The following goals, objectives, standards, and guidelines are applicable to the Project:

4.16.1 Forest-wide Standards - Transportation and Utility Corridors (RFP 3-10)

1. Existing and proposed ROW of the following types shall be designated as corridors (Management Prescription 8.1). This does not prevent the inclusion of lower-rated transmission lines or smaller pipelines within the corridors.
    - Communication lines and zones for interstate use
    - Railroads
    - Federal, state, interstate, and forest highways
    - Electric transmission lines of 66 kV and greater, including fiber optics
    - Oil, gas, slurry, or other pipelines 10 inches or larger in diameter
2. Proponents of new facilities within existing corridors and new corridor routes shall demonstrate that the proposal is in the public interest, and that no other reasonable alternative exists to public land routing.
3. Allow for essential access for repair and maintenance of facilities within energy corridors.

4.16.2 Forest-wide Guidelines - Transportation and Utility Corridors (RFP 3-10)

1. Utility corridors should have irregular clearing widths and follow patterns of existing natural openings (RFP 3-10).
2. Utility structures should be made to blend with the existing landscape to the extent feasible (RFP 3-10).
3. Where feasible, new facilities should be limited to existing ROWs having widening potential (RFP 3-10).
4. Before new corridors or widening of existing corridors are approved, consideration should be given to wheeling, uprating, or multiple circuiting of transmission lines or increasing pipeline capacity by addition of compressors or looping (RFP 3-10).
5. Avoid parallel corridors. Consolidate facilities within existing energy corridors where feasible (RFP 3-10). Pipelines and other related utilities should share utility corridors except as needed to meet other resource goals (RFP 3-10).

4.16.3 Objective – Management Prescription 2.1.6(b) Gravel Creek Special Emphasis Area (RFP 4-33)

1. Coordinate a review of the status of the property with the Idaho Department of Transportation, Federal Highway Administration, and USACE every 3 years (RFP 4- 34).

4.16.4 Guidelines – Management Prescription 2.1.6(b) Gravel Creek Special Emphasis Area (RFP 4-33)

1. Manage to improve wetland/riparian conditions in the area (RFP 4-34).

4.16.5 Standards – Management Prescription 2.8.3 Aquatic Influence Zone (RFP 4-45)

1. Within legal authorities, ensure that new proposed management activities within watersheds containing 303(d) listed waterbodies improve or maintain overall progress toward beneficial use attainment for pollutants which led to listing (RFP 4-50).
2. All new and replaced culverts, both permanent and temporary, shall be designed and installed to meet desired conditions for riparian and aquatic species (RFP 4-51).

4.16.6 Guidelines – Management Prescription 2.8.3 Aquatic Influence Zone (RFP 4-45)

1. Avoid locating facilities and utility corridors in AIZs (RFP 4-49).
2. Use herbicides, pesticides and other toxicants and chemicals only as needed to maintain desired AIZ attributes (RFP. 4-50).
3. Avoid constructing roads within the AIZ unless there is no practical alternative (RFP 4-51).

4. Culverts (permanent and temporary) should be sized so that the probability of flow exceedance is 50 percent or less during the time the culvert is expected to be in place. Consider bedload and debris when sizing culverts (RFP 4-51).
5. When feasible, use bridges, arches, and open-bottom culverts in fish-bearing streams (RFP 4-51).
6. Avoid placing ditch relief culverts where they may discharge onto erodible slopes or directly into streams (RFP 4-51).
7. Where feasible, install cross-drainage above stream crossings to prevent ditch sediments from entering streams (RFP 4-51).
8. New or reconstructed roads and trails should cross the AIZ riparian areas as perpendicular as possible (RFP 4-51).
9. Avoid making channel changes on streams or drainages (RFP 4-51).
10. Design and install drainage crossings to reduce the chances of turning stream flows down the road prism in case of a blocked or overflowing culvert (RFP 4-51).
11. Road drainage patterns should avoid disruption of natural hydrologic flow paths (RFP 4-51).

4.16.7 Guidelines – Management Prescription 5.2 Forest Vegetation Management (RFP 4-71)

1. All ground disturbing areas within an activity area should be monitored for 5 years for noxious weeds invasions (RFP 4-72).

The Project would generally be consistent with these standards and guidelines. Given the spatial configuration of C-TNF lands within the vicinity of the North and South alternative corridors and the location of the Lanes Creek Substation on C-TNF lands, there are no reasonable alternatives to crossing public lands. Construction methods and mitigation measures would be implemented to minimize the impact of the Project on public lands.

In order to site either the North Alternative or South Alternative across the C-TNF, an amendment to the RFP would be needed. The RFP designates management prescriptions across the forest to serve different forest purposes and management goals. Appendix A of this EIS provides the necessary information for the RFP amendment. A NEPA evaluation of this proposed amendment, as called for by 36 C.F.R. Part 219, Section 219.10(f), would be performed as part of the EIS process. As part of the proposed plan amendment evaluation, a determination as to whether the proposed amendment is a significant or non-significant amendment to the current plan would be made and documented in the C-TNF's Record of Decision for the Project.

4.17 Bureau of Land Management Resource Management Plan

Portions of the North and South alternative corridors would be located on land managed by the BLM Idaho Falls District, Pocatello Field Office. At the present time, the 1988 Pocatello RMP provides direction for managing lands under the jurisdiction of the Pocatello Field Office. The purpose of the Pocatello RMP is to provide a comprehensive framework for the management of lands and mineral estate administered by the Pocatello Field Office. The 1988 Pocatello RMP does not establish a comprehensive set of goals and actions related to the impacts of utility ROWs on other resources. Rather, the RMP establishes generally that utility development may be permitted based on consideration of the following criteria:

- Type of need for the proposed facility
- Conflicts with other resource values and uses, including potential values and uses
- Availability of possible alternatives and mitigation measures.

By minimizing impacts on natural resources and public recreation on BLM lands, the Project would generally be consistent with the applicable BLM RMP policies.

4.18 Bureau of Indian Affairs Lands

The North Alternative ROW crosses lands managed by BIA for the Fort Hall Irrigation Project near the northeastern edge of the Blackfoot Reservoir. There is no comprehensive land or resource management document in place that establishes goals, objectives, or implementing actions for lands administered by BIA in the project area. BIA manages these lands for multiple uses; currently, these lands are predominantly leased for grazing. By minimizing impacts on natural resources and conflicts with existing uses on BIA-managed lands, the North Alternative would generally be consistent and compatible with ongoing management of BIA lands in the project area. The South Alternative does not cross BIA-managed land.

4.19 State, Areawide, and Local Plan and Program Consistency

CEQ regulations for implementing NEPA require EISs to discuss possible conflicts and inconsistencies of a project with approved state and local plans and laws. The Project would be undertaken solely by BPA, which is a federal entity. Pursuant to the federal supremacy clause of the U.S. Constitution, BPA is not obligated to apply for local development or use permits in such circumstances. Therefore, BPA would not formally apply to any local jurisdictions for permits such as conditional use permits or shoreline development permits. However, BPA is committed to planning the Project to be consistent or compatible to the extent practicable with state and local land use plans and programs, and would provide local jurisdictions with information relevant to these permits.

The only applicable state or local land use plan or program is the Caribou County 2006 Comprehensive Plan. Although the land use element of this plan does not contain any specifically applicable goals or policies, the plan’s public services, facilities, and utilities element includes the following policy that is relevant to the Project:

7.1.4 Policy: Coordinate the use and placement of utility easements and ROWs and encourage multiple and coordinated use of these (Caribou County 2006).

The North and South alternatives would be consistent with this policy because BPA would coordinate ROW placement with all affected landowners and land managers. Landowners would be able to continue to use their land in accordance with easement agreements after construction. Section 3.1, Land Use includes further discussion of the Project's consistency with state and local plans.

4.20 Noise Control Act

The Noise Control Act of 1972 as amended (42 U.S.C. 4901 et seq.) sets forth a broad goal of protecting all people from noise that jeopardizes their health or welfare. It places principal authority for regulating noise control with states and local communities. Neither the state of Idaho nor Caribou County has environmental noise regulations with numerical decibel limits applicable to the Project. As described in Section 3.12, noise levels created by the Project would be below BPA's 50 dBA criterion. Potential noise impacts and mitigation measures associated with the North and South alternatives are described in Section 3.12, Noise.

4.21 Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, states that each federal agency shall identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low income populations. Minority populations are considered members of the following groups: American Indian or Alaska Native; Asian or Pacific Islander; Black, not of Hispanic Origin; or Hispanic if the minority population of the affected area exceeds 50 percent, or is meaningfully greater than the minority population in the project area. The Order further stipulates that the agencies conduct their programs and activities in a manner that does not have the effect of excluding persons from participation in, denying persons the benefits of, or subjecting persons to discrimination because of their race, color, or national origin.

The Project has been evaluated for potential disproportionately high environmental effects on minority and low-income populations (see Section 3.10, Socioeconomics), and it is anticipated that there would not be a disproportional effect on minority and low-income populations from the Project.

4.22 Federal Aviation Administration Review

As part of transmission line design, BPA seeks to comply with Federal Aviation Administration (FAA) procedures. According to FAR 49 C.F.R. Part 77.13, the FAA requires BPA to submit its designs for FAA approval if a proposed structure is taller than 200 feet from the ground or water surface where the line crosses a body of water, if a conductor is 200 feet above the ground or water surface where the line crosses a body of water, or if any part of the proposed transmission line and/or its structure are within a prescribed distance of an airport. Given that all project structures would be less than 200 feet in height and more than 3.7 miles from an airport, no proposed structures for either the North or South alternatives have been identified as an object affecting navigable airspace. Although it is not expected that FAA would require a "Notice of Proposed Construction and Alteration" (Form 7460), BPA intends to submit a Form 7460 to the FAA. The FAA would then conduct its own study of the Project and make recommendations to

BPA for airway marking and lighting. General BPA policy is to follow FAA recommendations. Accordingly, BPA will coordinate with the FAA concerning the Project and to provide information to the FAA to aid in its review process.

4.23 Federal Communications Commission

Potential transmission line interference with radio or television transmissions is governed by Federal Communications Commission regulations under 47 C.F.R. Chapter 1 Section 14.5, which states in part that the operator "shall be required to cease operating the device upon notification by a Commission representative that the device is causing harmful interference. Operation shall not resume until the condition causing the harmful interference has been corrected." BPA would comply with the Federal Communications Commission's requirements relating to radio and television interference from the proposed transmission line if any such interference occurs. While the Project may slightly increase electromagnetic interference above existing levels, interference is not expected. BPA would investigate each complaint about electromagnetic interference.

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5.2 Personal Communications

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Call, Carol. Deputy Assessor, Caribou County. 2011. Personal communication on August 23, 2011, with Chris Dixon, LBG. Regarding: Caribou County agricultural land values in 2010.

Chamberlain, Sue. 2011. Caribou Lodge and Motel Personal communication on July 18, 2011, with Chris Dixon, LBG. Regarding: mines in the area and room availability.

Cravens, Dan. Regional Economist. Idaho Department of Labor. 2011. Personal communication on July 19, 24, and 25, 2011, with Chris Dixon. LBG. Regarding: unemployment and employment in southeastern Idaho.

Dayley, Eric. Captain. Region 5, Idaho State Police. 2011. Personal communication on July 22, 2011, with Chris Dixon, LBG. Regarding: staffing and capabilities of the Region 5 Idaho State Police.

Green, Devon, U.S. Forest Service. 2011. Personal communications in March and April 2011, with Dan Gunderson, BergerABAM. Regarding: wildlife species survey protocols.

Hemmert, Max. Clerk and Business Manager. Soda Springs School District. 2011. Personal communication on July 24, 2011, with Chris Dixon, LBG. Regarding: staffing, capacity and capabilities of the Soda Springs School District.

Klauser, Kristi. Bannock County Comptroller. Bannock County, ID. 2011. Personal communication on July 22, 2011, with Chris Dixon, LBG. Regarding: Bannock County's revenue and expenditures for 2010.

Kukachka, Robert. Soil Scientist, USDA-NRCS, Soda Springs, ID. 2012. Personal communication on April 25, May 15, and September 12, 2012, with Jason Medema, LBG. Regarding: prime farmlands within the Project corridor and project vicinity.

Larson, Brent. Forest Supervisor. U.S. Bureau of Land Management. 2012. Personal communication January, 2012, with Katey Grange, BPA. Regarding: site investigations and reclamation plans for Wooley Valley Mine site.

Mascarenas, Veda. Caribou County Clerk. Caribou County, ID. 2011. Personal communication on July 26, 2011, with Chris Dixon, LBG. Regarding: Caribou County's revenue and expenditures for 2010.

Mende, James. Fisheries Biologist. Idaho Department of Fish and Game. 2012. Personal communication on December 14, 2012, with Jason Medema, LBG. Regarding: species presence in project area.

Mickelsen, Larry. District Conservationist. Natural Resources Conservation Service. 2012. Personal communication on January 5, 2012 and July 2, 2012, with Jason Medema, LBG. Regarding: land use.

Miller, Danny. Realty Specialist. BLM. 2012. Personal communication on January 4, 2012, with Jason Medema, LBG. Regarding: land use.

Myers, Berry. Project Manager. U.S. Bureau of Land Management. 2011. Personal communication on August 22, 2011, with Chris Dixon, LBG. Regarding: mining in the project area.

Parker, Kevin. Rangeland Management Specialist. Soda Springs and Montpelier Ranger Districts. Caribou-Targhee National Forest. 2011. Personal communication on May 9, 2011, with Dan Gunderson, Berger/ABAM. Regarding toadflax on C-TNF lands.

Patterson, Charles. Outdoor Recreation Planner. BLM Pocatello Field Office. 2012. Personal Communication on November 13, 2012 with Jason Medema. Regarding: recreational opportunities on BLM lands.

Peterson, Debbie. Communications Supervisor. LifeFlight Dispatch Center, Boise, ID. 2011. Personal communication on July 21, 2011, with Chris Dixon, LBG. Regarding: capabilities and response time of LifeFlight services in the project area.

Wadman, Wally. Manager, JR Inn. 2011. Personal communication on July 18, 2011, with Chris Dixon, LBG. Regarding: room availability.

Watkins, Teresa. Administrative Assistant. Soda Springs Police Department. 2011. Personal communication on July 19, 2011, with Chris Dixon, LBG. Regarding: staffing and capabilities of the Soda Springs Police.

Webster, Marylyn. China Hat Store and RV Park. 2011. Personal communication on July 18, 2011, with Chris Dixon, LBG. Regarding: RV lot availability, periods of high occupation in the park.

6 Agencies, Organizations, and Persons Receiving this EIS

The project mailing list contains local, state, and federal agencies; public officials; Tribes; businesses; utilities; interest groups; media; libraries and potentially interested individuals. These entities have directly received or have been given instructions on how to receive all project information made available so far, and they will have an opportunity to review the draft and final EIS. Specific entities receiving this EIS are listed below by category.

6.1 Federal Agencies

Bureau of Indian Affairs

Bureau of Land Management, Pocatello Field Office

Environmental Protection Agency, Idaho Operations Office and Regions 8 and 10

National Park Service, National Trails System and Rivers, Trails, and Conservation Assistance

Natural Resources Conservation Service, Bear River Resource Conservation and Development Council

U.S. Army Corps of Engineers, Boise Regulatory Office and Idaho Falls Field Office

U.S. Department of Agriculture, Farm Service Agency

U.S. Forest Service, Caribou-Targhee National Forest

U.S. Forest Service, Roadless Area National Advisory Committee

U.S. Fish & Wildlife Service, Eastern Idaho Ecological Services Field Office

U.S. Fish & Wildlife Service, Grays Lake National Wildlife Refuge

U.S. Fish & Wildlife Service, Southeast Idaho National Wildlife Refuge Complex

6.2 State Agencies

Idaho Department of Agriculture

Idaho Department of Environmental Quality

Idaho Department of Lands

Idaho Department of Parks and Recreation

Idaho Department of Water Resources

Idaho Fish and Game

State of Idaho, Office of Energy Resources

Wyoming Fish and Game

Wyoming Public Service Commission

6.3 Local Governments

Bonneville County Commissioner

Caribou County

Caribou County Commissioners

Georgetown City Council Members

Lincoln County, Wyoming, Planning and Development

Oneida County Commissioners

Power County Commissioners

6.4 Public Officials

U.S. Senator Mike Crapo

U.S. Senator James Risch

U.S. Representative Mike Simpson

Kirk Hanson, Mayor of Soda Springs, Idaho

State Senator John Tippets

State Representative Marc Gibbs

State Representative Thomas Loertscher

6.5 Tribes or Tribal Groups

Shoshone Bannock Tribes of the Fort Hall Reservation

Shoshone Paiute Tribes of the Duck Valley Reservation

Northwest Band of the Shoshone Nation

Fort Hall Business Council

6.6 Businesses

Agrium

Aristeria Capital LLC

Associated Logging Contractors

Ball Brothers Sheep Company

Bear Lake Grazing Co.

Bowman Chiropractic

Brown Dirt Farm

C2C Holdings Inc.

Caribou Cattle

Columbia Helicopters Inc.

Corbridge Brothers Ltd.

D & R Corporation

Dirt Poor, LLC

Dry Creek Lumber

Etcheverry Sheep Company

Gentile Valley Land & Cattle Company

J.R Simplot Company, Anaconda Company

J R Simplot Company, Ruby Company

Jouglard Sheep Company

Hamilton Outfitters

Holland & Hart LLP

Hunsaker Ranching Inc.

Lake Family Ranches

Lewis Bros Inc.

Live Water Properties

Mays Land & Livestock

Money Pit Ranch

Monsanto

NEC

Newersaveat Farms

North Wind Inc.

Nu-West Industries

Osprey Ranch LLC

Oxarango Lamb & Wool

P4 Production LLC

Peart Land & Development LLC
Peavler's Mountain Star
Phillips Brothers Farm
PMD 403
R.C. Rich Sheep Company
Ranch Inc.
Rhodia Inc.
Silverstar Communications
SOAR, Inc.
Southern Pines LLC
Stiles Farms Inc.
Strasbaugh Development Corp.
Stoor Family LLC
Torgeson Ranch, Inc.
Union Pacific Railroad Company
West Logging and Construction
Wilcox Logging, Inc.

6.7 Utilities

Lower Valley Energy
PacifiCorp

6.8 Interest Groups

Blue Ribbon Coalition
Forest Service Employees for Environmental Ethics
Greater Yellowstone Coalition
Idaho Citizens Grazing
Idaho Conservation League
Idaho Foundation for Parks
Idaho Public Utilities' Commission
Idaho Woolgrowers Association
Jackknife Cattle Association
Jackknife Creek Coalition
Trout Unlimited
Western Lands Project
Western Watersheds Project
Wyoming Public Service Commission

6.9 Media

Caribou County Sun
The News-Examiner

6.10 Libraries

Bear Lake County District Library
Grace District Library
Marshall Public Library
Soda Springs Public Library
South Bannock District - Lava Hot Springs Library
Idaho Falls Public Library

6.11 Interested Individuals

Dick Artley
Lyle Auler

Laurence Beller

Bravyn Beus

Keith Bitton

P. Thomas Blotter

Bloxham Family Trust

Fred Brog

Clark and Nina Brown

Scott and Diane Brown

Scott W. Brown

Vaneal Burgess

Kay Burton

Paul Campbell

Mark J. and Beth Carter

Curtis Clemmer

Lane Clezie

Tami Cole

Susie Melva Cook

Craig and Dawn Corbett

Michael Commons

Keller R. Crane

J. Alan Crawford

James E. Crawford

Tucker Dahlke

David Dalling

Warren J. Davis

Curtis Dehl

Doyle and Ruth Dekay

Steve DeMott

Stewart S. Denney

Richard Dixon

Gregg Drameu

Bruce M. and Martha Dredge

Robert Eliason

Bryce Erickson

Ron and Linda Facer

David Farnsworth

Kym Ferguson

Tim and Diane Fowler

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Dale Fullmer

Brett Gentry

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Terry Hatch

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Hal Heiner

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Paul Kjellander

Elma N. and Keith Krogue

Keith and Karen Krogue

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Mike Pabst
Tim Palmer
Mike Panting
Jody Phillips
Lorin and Ruth Ann Rasmussen
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Emery and Marilyn Webster
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Dickson Whitney, Jr.
Lyn Whitworth
Bill and Elizabeth Williams
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7 List of Preparers

The Hooper Springs Transmission Project EIS is being prepared by BPA with the technical assistance of environmental consultants. Individuals responsible for preparing the draft EIS, along with their affiliation, experience, and education are listed below in alphabetical order by last name.

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Chris Dixon—Environmental Planner, LBG. Responsible for addressing impacts associated with local socioeconomics Education: M.U.R.P. Urban and Regional Planning; M.B.A. Business Administration; B.S. Environmental Economics and Management. Years of experience: 2.

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8 Glossary and Acronyms

8.1 Glossary

Access road: Roads constructed to each structure first to build the structure and line, and later to maintain and repair it.

Accipiter: Genus of hawks characterized by short, rounded wings, long tails, and long legs. In North America, there are three species: the northern goshawk, the Cooper's hawk, and the sharp-shinned hawk.

Air toxins: Also known as hazardous air pollutants, air toxics are chemical compounds that are known to cause or are suspected of causing cancer or other serious health effects. With the exception of particulate matter, ambient air quality standards for air toxics were not required by the Clean Air Act. Air toxics are regulated by EPA through other means, including vehicle emission standards for mobile sources. For mobile sources, the primary air toxics of concern are acrolein, benzene, 1,3-butadiene, diesel particulate matter plus diesel exhaust organic gases (diesel PM), formaldehyde, naphthalene, and polycyclic organic matter. As part of the 2007 Control of Hazardous Air Pollutants from Mobile Sources rule, these seven compounds were identified by EPA as among the national and regional-scale cancer risk drivers from their 1999 National Air Toxics Assessment.

Airshed: A geographic area used to evaluate air quality. Typically involves areas regional in scale, though local airsheds can be defined as well.

Alluvium: Loose, unconsolidated soil or sediments, eroded, deposited, and reshaped by water in some form in a non-marine setting.

Ambient (noise): Background noise generated by existing noise sources in the surrounding area.

Angle structures: Structures that support the transmission line at points where it changes direction at an angle of 15 degrees or more (see also Dead-End Structure).

Anticlinal: Pertaining to an anticline (a fold, generally convex upward, whose core contains the stratigraphically older rocks).

Aquatic influence zone (AIZ): Habitat associated with lakes, reservoirs, ponds, perennial and intermittent streams, and wetlands, as defined by USFS.

A-weighted decibel (dBA): The scale used to measure and describe volume that corresponds to human perception.

Basalt: Dark, fine-grained volcanic rock that sometimes displays a columnar structure. It is typically composed largely of plagioclase with pyroxene and olivine.

Bedrock: Solid rock beneath the soil and surface rock.

Blasting: The controlled use of explosives to excavate or remove rock.

Buffer: An area surrounding the boundary of the resource that protects its functions from disturbance and provides habitat to fish and/or wildlife.

Bunchgrass: Perennial grass species that tend to grow in discrete tufts or clumps (i.e., bunches) rather than in sod-like carpets.

Candidate species: Plants and animals that have been studied and USFWS has concluded that they should be proposed for addition to the federal endangered and threatened species list.

Capacity (electrical): The ability to store an electrical charge.

Carbon dioxide equivalent (CO_2e): A metric measure used to compare the emissions from various GHGs based upon their global warming potential. CO_2e are commonly expressed as "million metric tons of carbon dioxide equivalents (MMTCO2Eq)." The CO_2e for a gas is derived by multiplying the tons of the gas by the associated global warming potential.

Census collection district: A subdivision of the county and includes population data from both the town or city under which it is named as well as the surrounding lands.

Chert: A hard, dense sedimentary rock composed of interlocking quartz crystals and possibly amorphous silica.

Circuit: A connection that allows electrical current to flow.

Clastic: Denoting rocks composed of broken pieces of older rocks.

Clean Water Act 303(d) list: List of waterbodies that do not meet water quality standards as set by EPA under the Clean Water Act.

Climax species: A plant community that remains essentially unchanged in terms of species composition for as long as a site remains undisturbed.

Colluviums: A loose deposit of rock debris accumulated through the action of gravity at the base of a cliff or slope.

Conductor: The wire cable strung along a transmission line through which electricity flows.

Corona: The electrical breakdown of air molecules in the vicinity of high-voltage conductors.

Counterpoise: Underground wires that extend horizontally from each structure and that connect with ground wire to provide lightning protection.

Critical habitat: A formal term under ESA that refers to specific geographic areas, whether occupied by listed species or not, that are determined to be essential for the conservation and management of listed species, and that have been formally described in the Federal Register.

Cultural resources: A general term, not defined in federal law, which includes historic resources as well a larger universe of resources including archeological, Native American graves, and traditional uses.

Culvert: A corrugated metal or concrete pipe used to carry or divert runoff water from a drainage; usually installed under roads to prevent washouts and erosion.

Cumulative impacts: Impacts that could occur when considered along with other past, present, and reasonably foreseeable future actions.

Current (transmission lines): The amount of electrical charge flowing through a conductor (as compared to voltage, which is the force that drives the electrical charge).

Dampers: Devices attached to insulators in order to minimize vibration of the conductors in windy conditions.

Danger tree: A tree of sufficient height to potentially hit a structure or the conductors if it were to fall or be blown over.

dBA: A-weighted decibels are an expression of the relative loudness of sounds in air as perceived by the human ear. In the A-weighted system, the decibel values of sounds at low frequencies are reduced. This correction is made because the human ear is less sensitive at low audio frequencies, especially below 1,000 Hertz, than at high audio frequencies.

Dead-end structures: Heavier, 3-pole structures designed for use where the transmission line loads the structure primarily in tension rather than compression, such as in turning large angles along a line or bringing a line into a substation.

Decibels: Unit of measure for audible noise.

Easement: A grant of certain rights to the use of a piece of land (which then becomes a ROW). This includes the right to enter the ROW to build, maintain, and repair the facilities. Permission for these activities is included in the negotiation process for acquiring easements over private land.

Ecoregion: Areas of general similarity in ecosystems and in the type, quality, and quantity of environmental resources; they are designed to serve as a spatial framework for the research, assessment, management, and monitoring of ecosystems and ecosystem components.

Electric and magnetic fields (EMF): The two kinds of fields (electric and magnetic) produced around the electric wire or conductor when an electric transmission line or any electric wiring is in operation.

Electromagnetic Interference: Interference of an electrical device caused by the presence of an electromagnetic field.

Endangered (species): Those species officially designated by USFWS or the National Marine Fisheries Service as being in danger of extinction throughout all or a significant portion of their range. A designation also used by state agencies for state lists.

Environmental Justice Population: Low-income and minority populations protected under Executive Order 12898 from disproportionate adverse effects of federal projects.

Ephemeral waterbody: An ephemeral water body is a wetland, spring, stream, river, pond or lake that only exists for a short period following precipitation or snowmelt. floodplain—A floodplain, or flood plain, is a flat or nearly flat land adjacent to a stream or river that stretches from the banks of its channel to the base of the enclosing valley walls and experiences flooding during periods of high discharge.

Erosion: The movement of soil due to water, gravity or wind.

Extensional Tectonism: The structures formed and the tectonic processes associated with the stretching of the Earth's crust or lithosphere.

Fallow Land: Cropland that is not seeded for a season; it may or may not be plowed.

Faults: A crack in the earth's crust resulting from the displacement of one side with respect to the other.

Fish-bearing stream: Any water that has fish presence, or is used by fish, even if for only one day a year.

Fledgling: A young bird from the time it first leaves the nest until it is independent of all parental care.

Floodplains: Areas adjacent to rivers and streams that might be flooded during high water; those that have a 1 percent chance of being flooded in a given year are 100-year floodplains.

Forb: Herbaceous flowering plant other than a grass.

Fugitive dust: Any solid particulate matter that becomes airborne, other than that emitted from an exhaust stack, directly or indirectly as a result of the activities of people.

Gauss: A unit of magnetic induction.

Global Warming Potential: A measure of the total energy that a gas absorbs over a particular period of time (usually 100 years), compared to CO_2.

Greenhouse gas (GHG): Chemical compounds found in the earth's atmosphere that absorb and trap infrared radiation, or heat, re-radiated from the surface of the earth.

Ground rod: Rod that connects to a ground wire that is placed in the ground to route lightning strike electricity into the earth.

Ground wire: Wires placed above the conductors to route lightning-strike electricity to the ground.

Guy wire: A tensioned cable that anchors a structure to the ground to provide extra stability.

Guy wire anchors: Anchor plates buried into the ground to which guy wires are attached.

Habitat: The natural home or environment of an animal, plant, or other organism.

Herbaceous: Plants whose growing stems possess little or no woody tissue.

Herbicide: A chemical substance used to kill, slow, or suppress the growth of plants.

Hertz (Hz): The unit of frequency in cycles per second; power systems in the U.S. operate with a frequency of 60 Hz.

Hydrologic Unit Code: A unique code, consisting of two to eight digits, used to identify units (watersheds) in the U.S. Geological Survey's four-level classification system.

Insulators: A component made of non-conductive materials that connects the conductor to the suspension structure and prevents the transmission of electrical current from the conductor to the ground.

Intermittent: Referring to periodic water flow in creeks or streams.

Irreversible commitment of resources: The use of nonrenewable resources such as minerals and petroleum-based fuels. Irretrievable commitments of resources cause the lost production or use of renewable resources such as timber or rangeland.

Kilovolt: One thousand volts of electrical power.

Landslide: Any mass-movement process characterized by downslide transport of soil and rock, under gravitational stress, by sliding over a discrete failure surface; or the resultant landform. Can also include other forms of mass wasting not involving sliding (rockfall, etc.).

Lek: An area where birds gather during the breeding season for community courtship displays to attract mates.

Limestone: A hard sedimentary rock composed mainly of calcium carbonate or dolomite.

Lithic scatter: A surface scatter of cultural artifacts that consists entirely of lithic (i.e., stone) tools and chipped stone debris.

Liquefaction: The fluid-like behavior of soils during a seismic event.

Load: The amount of electric power or energy delivered or required at any specified point or points on a system. Load originates primarily at the energy-consuming equipment of customers.

Load growth: Increase in demand for electricity. (See Load).

Loess: A very fine grained type of sediment formed by the accumulation of wind-blown silt.

megawatts (MW): A megawatt is one million watts, or one thousand kilowatts; an electrical unit of power.

Milligauss (mG): A unit used to measure magnetic field strength; one-thousandth of a gauss.

Minority Population: Any readily identifiable groups of minority persons who live in geographic proximity, and if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who will be similarly affected by a proposed program, policy or activity.

Mitigation: Steps taken to lessen the impacts of proposed activities on a specific resource. Measures may include reducing the impact, avoiding it completely, or compensating for the impact.

Noxious weeds: Plants that are injurious to public health, crops, livestock, land or other property.

Ordinary high water mark: The highest level reached by a body of water that has been maintained for a sufficient period of time to leave evidence on the landscape.

Overstory: Stratum of trees that have outgrown the other vegetation in a forest to have their uppermost crown foliage largely or fully in direct sunlight, usually as a relatively continuous layer (excluding gaps).

Palustrine: Non-tidal, perennial wetlands characterized by emergent vegetation.

Particulate matter: A criteria air pollutant. Particulate matter includes dust, soot and other tiny bits of solid materials that are released into and move around in the air.

Perennial waterbody: a watercourse that flows throughout a majority of the year in a well-defined channel.

PM_{10}: A measure of particles in the atmosphere with a diameter of less than or equal to a nominal 10 micrometers.

$PM_{2.5}$: A measure of particles in the atmosphere with a diameter of less than or equal to a nominal 2.5 micrometers.

Pulling and tensioning: Process of installing and tightening new conductors.

Prehistoric: Referring to cultural resources that predate European settlement in North America.

Prime farmland: Federally designated land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and that is available for these uses.

Radiogenic: Related to or caused by radioactivity.

Reservoir: a natural or artificial place where water is collected and stored for use, especially water for supplying a community, irrigating land, furnishing power, etc.

Revegetate: Reestablishing vegetation on a disturbed site.

Right-of-way (ROW): For the purposes of this EIS, a ROW is an easement for a strip of land used for a transmission line.

Rhyolite: A pale fine-grained volcanic rock of granitic composition.

Riparian habitat: The zone of vegetation that extends from the water's edge landward to the edge of the vegetative canopy. Associated with watercourses such as streams, rivers, springs, ponds, lakes, or tidewater.

Sagebrush-steppe: Dry environment found in the western United States and Canada. It can be identified by the sagebrush, shrubs, and short bunchgrasses that grow in it.

Salmonid: Of, belonging to, or characteristic of the family Salmonidae, which includes the salmon, trout, and whitefish.

Scoping: Part of the environmental impact document process where significant issues are identified for detailed analysis.

Scrub-shrub: Wetlands dominated by woody vegetation less than 20 feet (6 meters) tall.

Sedimentation: The deposition or accumulation of sediment.

Seral: A seral community (or sere) is an intermediate stage found in ecological succession in an ecosystem advancing towards its climax community. In many cases more than one seral stage evolves until climax conditions are attained.

Shale: A soft, finely stratified sedimentary rock that formed from consolidated mud or clay and can be split easily into fragile plates.

Siltstone: A fine-grained sedimentary rock consisting of consolidated silt.

Site-potential tree: The height of two trees located at the site in question.

Snag: Standing dead tree.

Snubs: Trenches about 8 feet deep by 4 feet wide by 12 feet long used during installation of conductors.

Sock line: The line or rope connected to a steel wire that is used to pull the conductors through the structures during installation.

Sole source aquifers: EPA defines a sole or principal source aquifer as one which supplies at least fifty percent of the drinking water consumed in the area overlying the aquifer. These areas can have no alternative drinking water source(s) which could physically, legally, and economically supply all those who depend upon the aquifer for drinking water. For convenience, all designated sole or principal source aquifers are referred to as “sole source aquifers.”

Stand: An area of uniform vegetation that typically contains similar soil, light and water conditions and history of disturbance.

Substation dead-end structures: These are the structures within the substation where incoming or outgoing transmission lines end. Substation dead-ends are typically the tallest structure within the substation.

Suspension structure: A structure designed to support conductors strung along a virtually straight line with only small turning or descending or ascending angles.

Synclinal: Pertaining to a syncline (a fold of which the core contains stratigraphically younger rocks; it is generally concave upward).

Talus: Sloping mass of rock fragments at the foot of a cliff.

Threatened (species): Those species officially designated by USFWS or the National Marine Fisheries Service at risk of becoming endangered throughout all or a significant portion of their range.

Transmission line: The structures, insulators, conductors, and other equipment used to transmit electrical power to electric distribution facilities (substation).

Tributary: A stream that flows to a larger stream or other body of water.

Turbidity: The extent to which water is muddy or cloudy due to the presence of suspended matter.

Understory: Foliage layer lying beneath and shaded by the main canopy of a forest.

Volt: The international system unit of electric potential and electromotive force.

Voltage: The driving force that causes a current to flow in an electrical circuit.

Waters: Surface water is water collecting on the ground or in a stream, river, lake, wetland, or ocean; it is related to water collecting as groundwater.

Watershed: The region draining into a river, river system, or other body of water.

Wetlands: Areas with standing water or a high water table that under normal circumstances support vegetation typically adapted to saturated soil conditions; generally include swamps, marshes, bogs and areas with vegetation that grows in or around water.

Woody debris: Materials left over from cutting or harvesting, such as limbs of branches of a tree. Woody debris may be placed in stream channels to slow and divert water flow and improve habitat for fish.

Zoning: Regulations used to guide growth and development; typically involve legally adopted restrictions on uses and building sites in specific geographic areas to regulate private land use.

8.2 Acronyms

AIZ	Aquatic Influence Zone
ATV	All-terrain vehicle
BGEPA	Bald and Golden Eagle Protection Act
BIA	Bureau of Indian Affairs
BLM	Bureau of Land Management
BMP	Best management practice
BPA	Bonneville Power Administration
°C	Degrees Celsius
C-TNF	Caribou-Targhee National Forest
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
C.F.R.	Code of Federal Regulations
CNF	Caribou National Forest
CO_2	Carbon dioxide
COPC	Contaminants of potential concern
CRP	Conservation Reserve Program
dBA	Decibels on the A-weighted scale
DOE	Department of Energy
E3	Energy and Environmental Economics, Inc.
EA	Environmental assessment
EIS	Environmental impact statement
EMF	Electric and magnetic field

EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
°F	Degrees Fahrenheit
FAA	Federal Aviation Administration
FREC	Fall River Electric Cooperative
FS	Feasibility Study
g	Gauss
GHG	Greenhouse gas
HCWMA	Highlands Cooperative Weed Management Area
Highway 34	Idaho State Highway 34
HUC	Hydrologic Unit Code
ICES	International Committee on Electromagnetic Safety
IDAPA	Idaho Administrative Procedures Act
IDEQ	Idaho Department of Environmental Quality
IDFG	Idaho Department of Fish and Game
ITD	Idaho Transportation Department
kV	Kilovolt
kV/m	Kilovolts per meter
line mile	Transmission Line Mile
LOS	Level of Service
LVE	Lower Valley Energy
mG	Milligauss
MIS	Management Indicator Species
MP	Mile point
msl	Mean sea level

NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NERC	North American Reliability Corporation
NESC	National Electrical Safety Code
NHPA	National Historic Preservation Act
NOAA	National Oceanic and Atmospheric Administration
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NRI	Nationwide Rivers Inventory
ODA	Overburden disposal area
OHV	Off-highway vehicle
PAB	Palustrine Aquatic Bed
PCBs	Polychlorinated biphenyls
PEM	Palustrine Emergent
PM	Particulate matter
Project	Hooper Springs Transmission Project
PSS	Palustrine Scrub-Shrub
PUB	Palustrine Unconsolidated Bottom
RCRA	Resource Conservation and Recovery Act
RFP	Revised Forest Plan
RI	Remedial Investigation
RMP	Resource management plan
ROS	Recreation Opportunity Spectrum
ROW	Right-of-way
RV	Recreational vehicle

SHPO	State Historic Preservation Officer
Simplot	J.R. Simplot Company
SRMA	Special Recreation Management Area
STATSGO	State Soil Geographic Database Site
SWPPP	Stormwater Pollution Prevention Plan
TMDL	Total maximum daily load
TNF	Targhee National Forest
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USDA	U.S. Department of Agriculture
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
V/m	Volts per meter
VOC	Volatile organic compounds
VQO	Visual Quality Objectives
VRM	Visual Resource Management
WECC	Western Electricity Coordinating Council
WMA	Wildlife Management Area

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