
Summary

This summary covers the major points of the draft environmental impact statement (DEIS) prepared for the Rebuild of the Libby (FEC) to Troy Section of Bonneville Power Administration's Libby to Bonners Ferry 115-kilovolt Transmission Line Project (Libby-Troy Project). This DEIS was prepared by Bonneville Power Administration (BPA). The project would include rebuilding a 17-mile section of an existing BPA transmission line located between Libby and Troy, Montana.

S.1 Purpose of and Need for Action

Historically, BPA has served electrical loads in northwestern Montana and northern Idaho with transmission facilities from Libby Dam east of Libby, Montana through Bonners Ferry Substation west of Bonners Ferry, Idaho to Albeni Falls Dam near the Idaho-Washington border (Figure S-1). These facilities include a 17-mile section of 115-kilovolt (kV) transmission line that extends from a Flathead Electric Cooperative (FEC) substation near the town of Libby, Montana, to a BPA substation near Troy, Montana. This line section, referred to as the Libby-Troy line, is an integral part of the larger 115-kV transmission loop in the area that provides electrical service to Libby, Bonners Ferry, Sandpoint, and many smaller communities.

The Libby-Troy line section originally belonged to Pacific Power and Light and was purchased by FEC in November 1998. It was the only section of this transmission loop that BPA did not own. In 2003, BPA purchased this section from FEC because BPA was concerned its deteriorating condition could threaten the reliability of the regional transmission system. The transmission line is supported by wooden structures (Figure S-2). Most of the cross-arms that carry the line on the structures are rotting and metal parts, such as fittings, are corroding. In 2003, a fitting failed, and the conductor (the wire that carries the electric current) fell to the ground, starting a fire.

The Libby-Troy transmission line provides backup service (redundant load service) to the area if another transmission line is out of service. This means service to the area is maintained because the Libby-Troy line provides an electrical connection to Libby and Albeni Falls dams. Without the Libby-Troy line, this level of service would be reduced and the area could lose power if another line failed. BPA has taken steps to prevent the line from failing in the near term, but these measures cannot solve the problem for the long term. BPA needs to rebuild or reinforce this section of its transmission system to provide redundant load service to northwestern Montana.

In addition, electrical load for the communities served by the Libby Dam-Albeni Falls Dam transmission system is projected to grow at an average of 1 percent per year. Over time this load growth will increasingly strain the existing electrical system.

BPA must decide whether to rebuild the Libby-Troy transmission line. If BPA's decision is to rebuild the transmission line, BPA must choose among alternative voltages and alternative routing options in certain locations, and among various measures to mitigate construction and operational impacts. Additionally, the United States Forest Service (USFS) must decide whether to grant BPA a permit for additional corridor areas across the Kootenai National Forest beyond what has been granted under the Special Use permit for the existing transmission line. In making these decisions, BPA and the Kootenai National Forest will consider the following purposes or objectives:

- Maintain transmission system reliability to industry standards;
- Continue to meet BPA's contractual and statutory obligations;
- Minimize environmental impacts; and
- Minimize costs.

S.1.1 Public Involvement

During the development of this EIS, BPA solicited input from the public, agencies, interest groups, and others to help determine what issues should be studied in the EIS. BPA requested comments through publishing notices in the Federal Register, mailing letters to about 300 people and agencies requesting comments, holding four public meetings (including one devoted to electric and magnetic fields), and meeting with state agencies. Most scoping comments received by BPA focused on potential impacts to fish, wildlife, visual resources, and cultural resources; public health and safety; residential land use and property values; and proposed realignment options near Pipe Creek, Quartz Creek and across the Kootenai River.

S.1.2 Cooperating Agencies

BPA is the lead agency for the Libby-Troy Project EIS. The USFS – Kootenai National Forest, the U.S. Army Corps of Engineers, and the Montana Department of Environmental Quality (DEQ) are cooperating agencies in the development of this EIS because of their roles as managers of lands crossed by the Libby-Troy line, or because the agencies need to make findings on the project.

S.1.3 Tribal Involvement

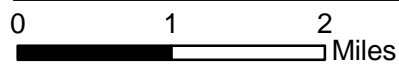
Throughout the EIS process, BPA has strived to involve the potentially affected tribes in the proposed project area: the Kootenai Tribe of Idaho and the Confederated Salish and Kootenai Tribes. Representatives from both tribes participated in site trips conducted in 2002 and 2004 and provided advice and perspective in developing project alternatives. In 2005, BPA sent a letter to these tribes that outlined a process for initiating a formal government-to-government consultation process when or if desired. To date, the tribes have not requested formal government-to-government consultation meetings.

S.2 Alternatives

- BPA is considering two alternatives to meet the purpose and need: the Proposed Action (115-kV single-circuit rebuild) and Alternative 1 (230-kV double-circuit rebuild). Both of these alternatives include rebuilding the existing 17-mile-long Libby-Troy section of the 115-kV, Libby-Bonnets Ferry transmission line. BPA is also considering the No Action Alternative. Under the No Action Alternative, the existing line would not be rebuilt but would continue to be operated and maintained in its current location.

REBUILD OF THE LIBBY TO TROY SECTION OF BPA'S LIBBY TO BONNERS FERRY 115-KILOVOLT TRANSMISSION LINE

PROJECT LOCATION MAP



- Legend**
- ▲ Substation
 - Corridor Mile Marker
 - ▬ Proposed Rebuild Section
 - ▬ Potential Realignment
 - Other Transmission Lines
 - Major Road
 - Major Highway
 - Railroad
 - Cabinet Mtns. Wilderness

Data Source: Bonneville Power Administration
Regional GIS Database. All Data Is Best
Available, 12/1/2006

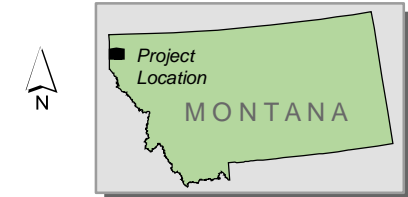


Figure S-1

REBUILD OF THE LIBBY TO TROY SECTION OF BPA'S
LIBBY TO BONNERS FERRY 115-KILOVOLT TRANSMISSION LINE

TYPICAL SUSPENSION STRUCTURE TYPES



ALTERNATIVE 1
Steel Pole
230-kV Double Circuit
Typical Height 110'
Average Span 900'
Proposed 100' Corridor

PROPOSED ALTERNATIVE
Wood Equivalent Steel 2 Pole H-Frame
115-kV Single Circuit
Typical Height 70'
Average Span 600'
Proposed 80' Corridor

PROPOSED ALTERNATIVE
Steel Pole
115-kV Single Circuit
Typical Height 100'
Average Span 900'
Proposed 80' Corridor

EXISTING & PROPOSED
Wood Pole
115-kV Single Circuit
Typical Height 70'
Average Span 350'
Proposed 60-80' Corridor

EXISTING & PROPOSED
Wood 2 Pole H-Frame
115-kV Single Circuit
Typical Height 65'
Average Span 600'
Typically 60'-80' Corridor
Proposed 80' Corridor

EXISTING
Wood Pole
115-kV Single Circuit
Typical Height 65'
Average Span 350'
Existing 60' Corridor

Figure S-2

S.2.1 Proposed Action – 115-kV Single-Circuit Rebuild

Under the Proposed Action, BPA would rebuild the Libby-Troy section at the same voltage (115-kV), with the same number of circuits (one) as currently exists. The line would be rebuilt in the same location as the existing line.

Removal of Existing Wood-Pole Structures

The 186 existing wood pole structures would be removed. In most cases, the structures would be removed using a backhoe or line truck/crane and would be disposed of by the contractor according to the regulations required for handling hazardous materials (structures contain preservatives that are considered hazardous). In culturally sensitive areas, such as the Kootenai Falls area, the poles would be cut off at the ground line and transported off site via trailer or helicopter.

Line Routing and Corridor

BPA's existing Libby-Troy transmission line corridor crosses a combination of private, City of Libby, county, state, tribal, and federal (USFS) land. BPA holds right-of-way easements, agreements and permits that give BPA the right to clear vegetation a certain width out from the centerline of the corridor; the right to cut and remove trees beyond the stated width if they might endanger the transmission line; and the right to access, operate, and maintain the line along most of the corridor. In some areas, additional right-of-way easements or permitted areas would be acquired because either the existing corridor is not wide enough to accommodate the rebuilt 115-kV line or because BPA does not have a right-of-way easement or permit. Easements or permits giving BPA the rights to construct, operate, rebuild, access, and maintain the line would be needed in the following areas.

- Structures 15/18¹ to 17/5, 28/7 to 29/1, and 30/2 to 31/1 cross National Forest lands where the existing Special Use Permit limits the clearing width to 60 feet. Additional easement width would be needed.
- Structures 17/15 to 18/8 cross private land along Kootenai River Road near Bobtail Road. BPA would need to acquire right-of-way easements for an additional width because the centerline of the transmission line would need to be moved to the north between structures 17/15 and 18/6. Between structures 17/15 and 17/18, the centerline would be moved to the north side of Kootenai River Road to eliminate the road crossings.
- Land under structures 26/1 to 26/8 is currently owned by Lincoln County; the land rights were originally acquired as an agreement for a license and permit for a power line across property owned by Great Northern Railroad Company. BPA would be acquiring easement rights from Lincoln County.
- Structures 28/3 to 28/7, 29/1 to 30/2, and 31/1 to BPA's Troy Substation cross private lands where the fixed clearing width was limited to 60 feet. Additional easement width would be needed.

¹ BPA transmission structures each have individual numbers (e.g., 1/1, 1/2, etc.). The first number in the pair represents the line-mile number; the second number indicates whether the structure is the first, second, third, etc. structure in that mile. In this case, the rebuild project begins at line-mile 14/structure number 1, indicating that the entire transmission line begins at Libby Dam, 14 miles away. The proposed rebuild project ends at line mile 31/structure number 10.

BPA does not permit any use of its rights-of-way that are unsafe or might interfere with constructing, operating, or maintaining the transmission facilities.

Transmission Structure Design

About 171 transmission structures would be needed to carry the transmission line conductors for the proposed rebuild on the existing corridor. Wood or colorized steel H-frame structures would be used for about 14.6 miles of the 17-mile-long line. This includes the areas inaccessible to motor vehicles along the historic U.S. Highway 2 west of Kootenai Falls, and along Sheep Range Road. About 1.6 miles of the line would be constructed with single wood poles, and the remaining 0.8 miles would be constructed using colorized steel single-pole structures. The wood or steel H-frame structures and the single wood poles would be about 60 to 80 feet tall. The steel poles would range from 70 to 105 feet tall. The steel structures would be colorized a dark gray to blend with the surrounding environment as much as possible.

Structure Footings

At each structure site, an area about 75 feet by 75 feet would be temporarily disturbed during construction, depending on the terrain and structure type. Structures without guy wires would permanently use an area about 15 feet by 15 feet; structures with guy wires would use an area about 30 feet by 50 feet. New structures would be constructed in the same holes used for the existing structures where possible, although some new holes may be needed. New footing holes would either be hand dug (in inaccessible areas), augered, or dug with a small backhoe excavator, depending on subsurface conditions. The wood or steel poles would be placed directly in the holes (direct-embedded) and then backfilled with native material or gravel (crushed rock). Concrete could be used as backfill for some structures.

Fiber Optics

Although there is no operational need at this time to install fiber optic cable between Libby and Troy substations, BPA would provide space on the transmission structures for future BPA installation should the need arise.

Conductor, Fiber Optic Cable, and Pulling/Tensioning Sites

Conductors are suspended from structures with insulators. Insulators are bell-shaped devices that prevent electricity from jumping from the conductors to the structure and going to the ground. The proposed project would most likely use a combination of ceramic and non-ceramic polymer insulators. Two smaller wires (0.5-inch diameter), called overhead ground wires, would also be attached to the top of the transmission structures for about a half mile coming out of Libby and Troy substations to protect the substations from lightning damage. Overhead ground wires might also be strung in other areas of high lightning exposure. A fiber optic cable may be installed either as the overhead ground wire or independently on the structure.

Every two to three miles a conductor pulling and/or tensioning site is needed so trucks can pull the conductor to the correct tension. These temporary sites typically disturb an area of about one acre.

Vegetation Clearing

Clearing of tall-growing vegetation 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. Because

most vegetation within the existing corridor is low-growing shrubs or young trees and most of the corridor is already 80 feet wide, additional clearing of tall-growing vegetation would be minimal. On either side of both the existing and new right-of-way, danger trees that pose a hazard to construction activities and reliable operation of the transmission line would be removed.

Access Roads

Much of BPA's road system for the existing corridor would be used for rebuilding the line, although roads would need to be improved in most areas. Many of the structures located along the historic U.S. Highway 2 section and a few located along the north side of the Kootenai River are inaccessible except by helicopter.

The proposed transmission line rebuild would require improving about 20 miles of existing access road on and off the existing transmission corridor and constructing about 4.5 miles of new access road on and off the existing corridor. Improvement and construction would consist of the following activities: widening existing roads; installing or improving an estimated 210 culverts, drain dips and water bars; installing two bridges, one at Burrell Creek and one at China Creek; constructing an access road for bridge approaches to China Creek; clearing and disposal of brush and trees; soil excavation and embankment placement for new roads (except roads constructed west of the gate at the end of Kootenai River Road); placing sub-grade reinforcement material (approximately 20,000 cubic yards); and placing crushed rock (approximately 40,000 tons).

To protect cultural resources, access road construction and improvement in the area west of the gate at the end of Kootenai River Road would be accomplished primarily by hauling and placing borrow sub-grade reinforcement (fill) material and not by normal soil cutting and filling practices. Normal cut and fill practices could damage or disturb subsurface deposits of cultural materials.

Where BPA needs to acquire rights for access roads, a 50-foot-wide easement would be acquired for new roads and a 20-foot-wide easement would be acquired for existing roads. The 50-foot-wide easement would allow the agency to cut and remove trees and build road cuts and fills. These activities would not be needed on existing roads.

Staging Areas

Temporary staging areas would most likely be set up at both the Troy and Libby ends of the project for construction crews to store materials and construction equipment. However, no staging areas would be located along the Sheep Range Road because the road is located in a culturally sensitive area.

Construction Schedule and Work Crews

Construction would take place during one season between May and November 2008. 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 3 months. In the inaccessible areas along historic U.S. Highway 2 and north of the Kootenai River, construction could take longer due to difficult terrain and limited access. Helicopters could be used for clearing and would be used intermittently for 6 to 7 months during removal of the existing line and construction of the new line.

Maintenance and Vegetation Management

During the life of the project, BPA would perform routine, periodic maintenance and emergency repair of electrical equipment, structures, and conductors. Tall-growing vegetation would be removed from the corridor and from around structures so as not to interfere with the conductors. Access roads would be graded, seeded, ditched, and rocked to reduce soil erosion as needed.

Noxious weed control is also part of BPA's vegetation management program. BPA works with the county weed boards and landowners on area-wide plans for noxious weed control.

Estimated Project Cost

The estimated cost for rebuilding the Libby to Troy transmission line as a 115-kV single-circuit line is approximately \$17 million. Annual maintenance costs would be about \$10,000 to \$20,000.

S.2.2 Alternative 1 – 230-kV Double-Circuit Rebuild

Under Alternative 1, BPA would remove the existing Libby to Troy transmission line and rebuild the line as a 230-kV double-circuit transmission line for its full 17-mile length.

Line Routing and Corridor

Additional transmission line right-of-way easements and permitted areas would need to be acquired to accommodate a 230-kV transmission line. BPA would need to acquire an additional 10 to 20 feet from each edge of existing right-of-way easement (on private, county, state, and tribal lands) or permitted area (on National Forest and former Great Northern Railroad lands) so that the cleared width would extend 50 feet on each side of the center conductor, for a total right-of-way easement width or permitted area width of 100 feet.

Transmission Structure Design

The structures for the proposed 230-kV rebuild would be single tubular steel pole structures 90 to 110 feet tall with spans of 800 to 900 feet between structures. Three types of structures (suspension, angle, and dead-end) would be used. The steel in all the structures would be colorized a dark gray to blend with the surrounding environment as much as possible. About 120 transmission structures would be needed to carry the conductors for this alternative.

Structure Footings

Concrete shaft or direct-embed footings would be used for the 230-kV rebuild, depending on the terrain and tower type. Footing holes would either be hand dug, drilled or augered, or dug with an excavator, depending on subsurface conditions. At each structure site, an area about 100 feet by 100 feet would be temporarily disturbed during construction, depending on the terrain and type of structure. An average area of 10 feet by 10 feet would be permanently occupied by the structure.

Conductor, Fiber Optic Cable and Pulling/Tensioning Sites

The 230-kV double-circuit structures would hold six conductors or two circuits. The conductors for the proposed transmission line would be dulled to reduce the shininess of the metal. Conductors are attached to the 230-kV structures in the same manner as the 115-kV single-circuit alternative, with about the same number and size of pulling/tensioning sites required. Ground wires and counterpoise would be installed

with this alternative. The structures also could accommodate fiber optic cable, as for the 115-kV alternative.

Vegetation Clearing

Because the existing corridor would need to be widened to 100 feet to accommodate the higher voltage line, all tall-growing vegetation on the additional right-of-way and permitted areas would be cleared, except where the vegetation would not interfere with construction or operation of the line. Additionally, danger trees located outside the 100-foot right-of-way would also be cleared.

Access Roads, Staging Areas, Removal of Existing Structures, Maintenance and Vegetation Management

The 230-kV rebuild alternative would require the same work on existing and new roads as for the 115-kV alternative. Temporary staging areas, wood pole removal processes, and maintenance activities also would be the same.

Construction Schedule and Work Crews

The construction schedule and work crews would be similar to those for the Proposed Action.

Estimated Project Cost

The estimated cost for rebuilding the Libby to Troy transmission line as a 230-kV double-circuit line is \$30 million. Since steel structures require less maintenance than wood structures, annual maintenance costs would be about \$7,000 to \$9,000.

S.2.3 Short Realignment Options

BPA is considering realignment of the corridor in three locations that could be built at either 115-kV or 230-kV, depending on whether the Proposed Action or Alternative 1 is selected. All tall-growing vegetation on the three potential realignments within the 80- to 100-foot new corridor would be cleared (a distance of 40 to 50 feet from the structure centerline to the edge of the corridor), except in areas where the vegetation would not interfere with construction or operation of the line.

Pipe Creek Realignment

BPA identified this potential realignment to minimize impacts to private properties located along Kootenai River Road. The realignment would involve acquisition of new right-of-way in the vicinity of Pipe and Bobtail creeks. This realignment would head northwest from existing structure 17/13, cross Pipe Creek, Bobtail Road, and Bobtail Creek to rejoin the existing transmission corridor at existing structure 18/11. This realignment would be located on both private and Kootenai National Forest lands.

Under the 115-kV option, the Pipe Creek realignment would be constructed as a single-circuit wood H-frame line with structures approximately 60 to 80 feet tall on new 80-foot-wide right-of-way.

Approximately 7 new structures would be needed. At 230-kV, approximately 6 double-circuit, single-pole structures of colorized steel would be needed. Poles would be 90-110 feet tall and a 100-foot wide right-of-way would be needed.

If this realignment is used on the existing corridor between existing structures 17/14 and 18/7, the upper portions of the wood poles that support BPA's transmission line through that area would be removed,

leaving the lower sections to support an existing electrical distribution line that serves the residential area along Kootenai River Road. BPA would relinquish easement rights or transfer them to FEC, and would remove the conductor and cross arms. From structures 18/7 to 18/10, the entire structures would be removed and the easements abandoned.

Approximately 0.3 miles of existing road would need to be improved (bladed and rocked) for the Pipe Creek realignment. Approximately 0.5 miles of road would need to be constructed to access the new structures along the Pipe Creek realignment.

Approximately 7.4 acres of tall-growing vegetation would be cleared to accommodate a 115-kV single-circuit transmission line on new right-of-way, and approximately 9.4 acres would be cleared for a 230-kV double-circuit line.

Quartz Creek Realignment

This possible realignment was suggested during the scoping phase by individuals concerned about impacts to residents in the Big Horn Terrace area. It would involve acquisition of new right-of-way in the vicinity of Quartz Creek. Beginning east of Quartz Creek Road, between structures 19/3 and 19/4, the line would head northwest to an angle structure on the east side of the Quartz Creek drainage. The line would then cross high above Quartz Creek and travel southwest to rejoin the existing line at existing structure 21/5. This realignment would be located on both private and Kootenai National Forest lands.

For the 115-kV option, approximately 22 new structures would be constructed to accommodate the realignment on new 80-foot-wide right-of-way; approximately 18 structures would be needed for the 230-kV option with a right-of-way width of 100 feet. Approximately 19 structures would be removed between existing structures 19/4 and 21/4 from the existing corridor in the Big Horn Terrace area, and BPA's easement rights would be relinquished.

Approximately 2.2 miles of existing road would need to be bladed and crushed rock added to the surface, and approximately 1.6 miles of new road would need to be constructed, primarily on the corridor, to access the realignment.

About 26 acres of tall-growing vegetation along with individual danger trees would need to be cleared to accommodate a 115-kV single-circuit transmission line on new right-of-way, and about 32 acres would need to be cleared for a 230-kV double-circuit line.

Kootenai River Crossing Realignment

BPA identified this possible realignment to minimize visual, cultural, and fish and wildlife impacts to the Kootenai Falls area of the Kootenai River. Not only is the existing line visible from a culturally sensitive site near Kootenai Falls, but also there is no access to the existing line between structures 25/6 and 25/8 due to a wash-out in 1996 at China Creek. Beginning at a new location between existing structures 25/1 and 25/2, the proposed alignment would head southwest across the Kootenai River, and then northwest along the south side of U.S. Highway 2 for about $\frac{3}{4}$ mile to rejoin the line near existing structure 26/1. This realignment would be located on Lincoln County and Kootenai National Forest lands and within the Burlington Northern – Santa Fe (BNSF) Railroad right-of-way and the Montana Department of Transportation road right-of-way.

About 7 new structures for both the 115-kV and 230-kV would be constructed to accommodate the realignment on new 80- to 100-foot-wide right-of-way. Nine structures on the existing corridor between

existing structures 25/2 and 25/10 would be eliminated, seven of which are on the north side of the Kootenai River.

About 300 feet (0.06 mi.) of existing road would need to be improved and about 820 feet (0.2 mi.) of new road would need to be constructed for the Kootenai River Crossing realignment. If the new river crossing is used, a bridge over China Creek and access road improvements from structures 25/1 to 25/8 would not be needed.

Approximately 2.6 acres of tall-growing vegetation along with individual danger trees would need to be cleared to accommodate a 115-kV single-circuit transmission line on new right-of-way; 3.2 acres plus danger trees would need to be cleared for the 230-kV option.

S.2.4 No Action Alternative

For the No Action Alternative, BPA would not rebuild the Libby-Troy transmission line. The existing line would remain in place in its current location, and none of the realignment options would be implemented. BPA would continue to attempt to maintain the existing line as it further deteriorates. Some local power outages could occur if the transmission line failed and could not provide redundant load service.

S.2.5 Alternatives Considered but Eliminated from Detailed Study

Since transmission planning studies began in 2004, BPA has examined a wide range of alternatives. The following alternatives were eliminated from further detailed consideration:

- **Alternative Voltage/Number of Circuits** - BPA initially included a proposal to rebuild the Libby to Troy transmission line as a 115-kV double-circuit transmission line to provide additional transmission capacity in the event loads grow more than expected or additional generation is developed in the area. Because there are no forecasts for load growth beyond 1 percent per year or firm plans for increased generation in the area, there is no need for additional transmission capacity along the Libby–Troy line section. Additionally, rebuilding the Libby to Troy section to 115-kV double circuit would not fit into the overall system plan since portions of the corridor are already built for double-circuit 230-kV and a double-circuit 115-kV transmission line would at most have half the capacity of a double-circuit 230-kV line. BPA did not propose a 230-kV single-circuit option because transfer of additional generation out of the area would require costly upgrades to 230-kV at Libby, Troy, Moyie Springs and Yaak substations to allow for power to be delivered locally. Such upgrades could cost \$3-5 million per substation and would include additional equipment in the substations to deliver the power at 230-kV and then to transform it from that voltage to the lower voltages that connect with the local distribution system. Without the need for substantial amounts of additional power in the local area, such upgrades would not be cost effective.
- **1993 Alternative Transmission Line Routes** - In 1993, BPA identified a need to upgrade the transmission line between Libby and Bonners Ferry. A number of route combinations were proposed in a 1993 preliminary DEIS (BPA 1994). All routing

combinations included at least one line segment that had unworkable engineering constraints.

- **Alternative Transmission Line Realignment Options** - In addition to the realignment options being considered in this EIS, several other options for realigning portions of the existing line were suggested during the most recent scoping process. For various reasons described below, these alternative realignment options have been considered but eliminated from detailed study in this EIS.
 - Moving the Quartz Creek crossing to the south - One suggestion proposed moving the proposed Quartz Creek realignment crossing further to the south to avoid having the line cross private land. Because this variation could result in greater visual impacts, increased cost, and potential increased tree clearing than the proposed alignment, this variation was eliminated from detailed evaluation in this EIS.
 - Moving the transmission line to the south side of Kootenai River
 - *Crossing near the City of Libby* – Under this suggested realignment option, the Libby-Troy line would be realigned to cross the Kootenai River near Libby Substation and follow the BNSF Railroad right-of-way to a point that would meet with the alignment for the river crossing east of the Big Horn Terrace area. This realignment has been eliminated from detailed evaluation in this EIS because it would be economically infeasible to relocate the commercial and private developments located along this realignment option.
 - *Crossing east of the Big Horn Terrace area* – At a point east of the Big Horn Terrace, this suggested realignment would have the Libby-Troy line cross the Kootenai River to the south side of the river and then head west to Troy Substation. This realignment would use a combination of BNSF Railroad right-of-way, Montana Department of Transportation right-of-way and Kootenai National Forest land to the south of U.S. Highway 2. Because it would not be technically feasible to construct this realignment option, it was eliminated from detailed evaluation in this EIS.
 - *Crossing west of the Big Horn Terrace area* – At a point west of the Big Horn Terrace, this suggested realignment would cross the Kootenai River to the south side of the river and then head west to Troy Substation. This realignment would also use a combination of BNSF Railroad right-of-way, Montana Department of Transportation right-of-way and Kootenai National Forest land to the south of U.S. Highway 2. This realignment would require major construction on steep talus slopes, unstable steep slopes, and rock outcrops that would make this option technically and economically infeasible. For these reasons, this option was eliminated from detailed evaluation in this EIS.
 - *Use of the abandoned Northern Lights transmission line route* – BPA considered whether it could realign a portion of the Libby-Troy line to follow the former route of the Northern Lights 33-kV transmission line that followed the south side of the Kootenai River and crossed to the north side at the west end of the Big Horn Terrace. BPA's Proposed Action (115-kV single-circuit line rebuild) and Alternative 1 (230-kv double circuit line rebuild) are both much higher voltage, and therefore many times larger, than the Northern Lights line. Use of the Northern Lights route thus would require extensive acquisition of additional right-of-way. In addition, the route for the Northern Lights line crosses U.S. Highway 2 numerous times between its river crossing and the Kootenai Falls area approximately five miles to the west. Therefore, because this suggested realignment

is impractical due to engineering and construction constraints, it was eliminated from detailed evaluation in this EIS.

- **Undergrounding of the Transmission Line** - Excessively high costs (as much as 5 to 10 times more) of this option prevented its further consideration. BPA considers undergrounding a tool for limited, special considerations.
- **Non-Transmission Alternatives** - BPA considered whether there could be a solution to the problem that would not require rebuilding the Libby-Troy line. The proposed rebuild project was presented to BPA's Non-Wires Solutions Panel in December 2005. After its review, the consensus of the Panel was that this proposed project was not a candidate for a non-wire solution. Use of non-transmission alternatives thus was eliminated from detailed evaluation in this EIS.

S.3 Affected Environment, Environmental Impacts, and Mitigation Measures

S.3.1 Affected Environment

The proposed project is in central Lincoln County, Montana. Lincoln County is in the northwest corner of the state, bordered by Idaho (Boundary and Bonner counties) to the west and Canada to the north. Lincoln County is bordered in Montana by Sanders and Flathead counties to the south and east, respectively. The 17-mile transmission line corridor passes between the Purcell and Cabinet mountains as it follows the Kootenai River canyon from the town of Libby, Montana to the town of Troy, Montana. The Libby and Troy areas are dominated by natural features that range from the Kootenai River corridor with its massive rock outcrops and forested mountain environments to valley bottoms. Open or partially forested areas are found along the gently sloping Kootenai River valley edges. Topography in the project area was influenced by past glacial scouring, with elevations ranging from 2,000 feet above mean sea level in valley floors to 7,500 feet above mean sea level in the Purcell and Cabinet Mountain ranges.

The existing transmission line corridor lies within Montana's Montane Forest Ecotype characterized by coniferous forests. Warm, dry summers and cool, wet winters are typical of the project area. Wildlife habitat within the project area includes forest (including old growth), streams and rivers, wetlands and rocky cliffs. The Libby and Troy areas are less forested and more urban. Habitat better suited to wildlife species along the transmission line corridor is in the area west of Pipe Creek Road on the north side of the Kootenai River to near Shannon Road on the south side of the Kootenai River. This area of the Kootenai River corridor is dominated by western larch, Douglas fir, and ponderosa pine forests intermixed with natural grassy and rock openings with grand fir and western red cedar in wetter areas along the Kootenai River. The existing transmission corridor crosses many streams including the following fish-bearing streams: Pipe Creek, Bobtail Creek, Quartz Creek, China Creek and the Kootenai River.

The Kootenai River recreation corridor is used year round. Peak use periods are during the spring-summer for hiking and fall for hunting. Other recreational activities include viewing and photographing scenery and wildlife, fishing, hiking, hunting, and picnicking. The Kootenai River recreation corridor is important due to the ease of access year round from U.S. Highway 2 and to its position between the communities of Libby and Troy. The Kootenai Falls area is a national treasure visited by people from around the world traveling U.S. Highway 2.

The existing transmission corridor and proposed realignment options cross lands that provide habitat to a wide variety of wildlife, fish, and plant species. In addition to more common species, several species known to occur in the vicinity of the transmission line are considered to have a special status due to being listed under federal or state laws or having a special designation under the Kootenai National Forest Plan or as assigned by the Regional Forester. In addition, there are several species of noxious weeds present in the project vicinity.

Roads in the project area are a combination of unimproved gravel, improved gravel, paved and highway system controlled access roads. These provide access to and around the existing transmission line corridor and short realignment options.

S.3.2 Environmental Impacts and Mitigation Measures

Tables S-1 and S-2 provide a summary of the environmental impacts and mitigation for the Proposed Action, Alternative 1, and short realignment options. Mitigation measures listed in Table S-1 would apply to the Proposed Action, Alternative 1, and short realignment options.

S.3.3 Cumulative Impact Analysis

“Cumulative impacts” are the impacts on the environment which result from the incremental impact of an action – such as the Proposed Action, Alternative 1, and short realignment options - when added to other past, present, and reasonably foreseeable future actions.

In addition to reconstruction of the existing transmission line, past actions that have adversely affected natural and human resources in the project area include logging activities on federal, state, and private lands, highway and railroad construction, construction and operation of Libby Dam, and commercial and residential development.

Reasonably foreseeable future actions that may occur in the vicinity of the proposed project could include Kootenai National Forest fuels reduction projects, selling or clearing of private timber lands, construction of residential subdivisions near Libby and Troy, State of Montana road work, and Libby Dam operations with regard to white sturgeon and threatened bull trout.

The Proposed Action, Alternative 1, or the short realignment options, in combination with past, present, and reasonably foreseeable actions, could potentially result in cumulative impacts to a number of resources. The resources include those previously discussed including the following: geology, soils, and water resources; land use; vegetation; wetlands and floodplains; wildlife; fish, amphibians, and reptiles; visual resources; cultural resources; recreational resources; noise, public health and safety; social and economic resources; transportation; and air quality. The contribution of the action alternatives and short realignment options to these cumulative impacts would vary, with the greatest contribution occurring in cumulative impacts on visual resources and cultural resources.

S.4 Agency Preferred Alternative

BPA has evaluated the alternatives and realignment options, considering the purpose and need of the proposed project, the affected environment, and environmental consequences, and based on these factors, BPA’s preferred alternative at this time is the Proposed Action (rebuild to single-circuit 115 kV) with the Kootenai River realignment option.

Table S-1. Summary of Impacts of the Proposed Action, Alternative 1, and the No Action Alternative

Potential Impacts			Mitigation Measures
Proposed Action	Alternative 1	No Action Alternative	
Soils, Geology and Water Resources			
<ul style="list-style-type: none"> Approximately 4 acres would be disturbed for the removal of existing wood pole structures, with about 60 percent of the work in soils with low sediment delivery efficiencies. Construction of new structures would disturb about 6 acres of soils, with about 60 percent in soils with low sediment delivery efficiencies. Construction activities at the 12 proposed conductor tensioning sites would disturb approximately 2 acres of soils. Heavy equipment use and increased vehicular traffic would compact soils affecting soil productivity, reducing infiltration capacity, and increasing runoff and erosion. Construction of approximately 4.5 miles of new access roads would disturb about 15 acres of soils. Access road improvement on approximately 20 miles of existing roads would disturb about 80 acres of soils. The culvert in Burrell Creek would be replaced and a bridge would be constructed across China Creek both of which would disturb soils. Soil disturbance could increase sediment delivery to project area fish-bearing streams located near structures including: Pipe Creek (17/5 to 18/5), Bobtail Creek (18/8 to 18/13), Quartz Creek (20/2 to 20/4), and China Creek (25/5 to 25/6). Construction activities could contaminate water resources from accidental spills or leaks from construction equipment. Overspray of herbicides used for noxious weed control during maintenance activities could potentially affect surface water quality. Construction activities would remove danger trees and tall growing vegetation within the corridor potentially resulting in a slight increase in water yields in project area watersheds. Maintenance of the rebuilt line could result in localized soil disturbance and potential sedimentation due to vehicular traffic, possible future access road improvements, and vegetation management activities. 	<ul style="list-style-type: none"> Removal of wood poles would disturb the same amount of soils as the Proposed Action. Construction of new structures would disturb about 10 acres of soils, with about 60 percent in soils with low sediment delivery efficiencies. Construction activities at the 12 proposed conductor tensioning sites would have the same impact as the Proposed Action. Construction of new access roads and access road improvement would disturb the same amount of soils as the Proposed Action. Replacement of the culvert in Burrell Creek and installation of the bridge across China Creek would have the same impact as the Proposed Action. Soil disturbance from structure construction could increase sediment delivery to project area fish-bearing streams from wider clearing of the right-of-way. Similar to the Proposed Action, construction activities could contaminate surface water resources from accidental spills or leaks from construction equipment. Similar to the Proposed Action, overspray of herbicides used for noxious weed control during maintenance activities could potentially affect surface water quality. Construction activities would remove additional trees to widen the corridor to 100 feet and remove danger trees potentially resulting in a slight increase water yields in project area watersheds. Impacts from maintenance of the rebuilt line would be similar to those under the Proposed Action. 	<ul style="list-style-type: none"> Current levels of disturbance to soils associated with ongoing maintenance activities for the existing transmission line corridor would continue. This would include localized soil disturbance, potential erosion, and soil compaction due to vehicular traffic, transmission structure replacement, vegetation management activities, and access road improvements. Impacts to water quality and flow volumes could result if existing transmission structures fail and require immediate repair. New access roads might be needed with little or no planning in their construction due to the emergency nature of the repairs. 	<ul style="list-style-type: none"> Prepare and implement a Stormwater Pollution Prevention Plan (SWPP) to lessen soil erosion and improve water quality of stormwater run-off. SWPP Plans are developed to prevent movement of sediment off-site to adjacent water bodies during short-term or temporary soil disturbance at construction sites. The plans address stabilization practices, structural practices and stormwater management. Comply with the terms and conditions of the permit issued under Section 404 of the Clean Water Act for discharge of dredged and fill material into waters of the United States. Comply with the terms and conditions of State of Montana permits for discharge of solid material, including building materials, into waters of the United States including a 318 Authorization under Montana's Water Quality Act and a Montana Streambed Preservation Act 124 permit. Design access roads to control runoff and prevent erosion by using low grades, outsloping, intercepting dips, water bars, ditch-outs, or a combination of these methods. Properly space and size culverts, cross-drains, and water bars using methods described in the Kootenai National Forest Hydraulic Guide (USDA Forest Service 1990). Construct during the dry season (summer-fall) to minimize erosion, sedimentation, and soil compaction. Minimize construction equipment use within 150 feet of a water body (stream, river or wetland). Armor ditches, drain inlets and outlets with rock where needed for erosion control. Conduct pre-construction assessments with construction personnel to determine appropriate site-specific mitigation approaches to help reduce erosion and runoff, and to stabilize disturbed areas. Surface all access roads with rock to help prevent erosion and rutting of road surfaces and to support vehicle traffic. Avoid construction on steep, unstable slopes if possible. Deposit all unused excavated material in upland areas and stabilize. Avoid and minimize placement of excavated material in environmentally sensitive areas such as streams, riparian areas, or wetlands. Save topsoil removed for structure and new access road construction for onsite restoration activities to promote regrowth from the native seed bank in the topsoil. If contaminated, follow-up weed control would be needed. Cover exposed piles of soil with plastic or similar material to reduce erosion potential if there is a threat of rain. Limit grubbing to the area around structure sites to lessen the impact on the roots of low-growing vegetation, so they may re-sprout. Avoid vegetation clearing at sides of existing access roads to the extent possible, to minimize impacts to adjacent forested areas. Cut or crush vegetation, rather than blade, in areas that will remain vegetated in order to maximize the ability of plant roots to keep soil intact and prevent sediment movement offsite. Install erosion control measures such as silt fence, straw mulch, straw wattles, straw bale check dams, and other soil stabilizers. Revegetate or reseed all disturbed areas with a native (where possible) plant/grass seed mixture suited to the site, to promote vegetation that will hold soil in place. Till or scarify compacted soils before reseeding where necessary as determined by applicable agencies. Monitor erosion control BMPs to ensure proper function and nominal erosion levels. Monitor revegetation and site restoration work for adequate growth; implement contingency measures as necessary. Minimize construction equipment access near Kootenai River and other stream bank areas. Inspect and maintain project facilities, including the access roads, to ensure erosion levels remain the same or less than current conditions. Inspect and maintain tanks and equipment containing oil, fuel or chemicals for drips or leaks and to prevent spills onto the ground or into state waters. Maintain and repair all equipment and vehicles on impervious surfaces away from all sources of surface water. Refuel and maintain equipment at least 200 feet from natural or manmade drainage conveyance including streams, wetlands, ditches, catch basins, ponds, and pipes, and provide spill containment and cleanup. Utilize pumps, funnels and absorbent pads for all equipment fueling operations.

Potential Impacts			Mitigation Measures
Proposed Action	Alternative 1	No Action Alternative	
			<ul style="list-style-type: none"> • Provide spill prevention kits at designated locations on the project site and at the hazardous material storage areas.
Land Use			
<ul style="list-style-type: none"> • New corridor would be needed in some areas to provide an 80-foot corridor for the length of the line. • Residents along Kootenai River Road near Bobtail Road would be affected by acquisition of new or additional right-of-way and removal or relocation of a garage, a barn, an outbuilding, and danger trees. The centerline of the transmission line would be moved closer to residences in this area. • Residents within the Bighorn Terrace subdivision would be affected by danger tree removal. • Residents who live west of Highway 56 would be affected by danger tree removal. • Residents who live along the line would be affected by construction related impacts including noise, road closures, and decreased air quality. • Residential areas along the corridor would be affected by altered public use on lands adjacent to their property or trespassing on their property as a result of the increased activity associated with reconstructing the transmission line, and possible increased public presence after construction. • About 5 acres of Kootenai National Forest land would be converted from forest to transmission line in miles 15 to 17 to widen the corridor from 60 to 80 feet. • About 0.3 acres of corridor clearing would occur in corridor mile 28 on private timber lands. Danger tree clearing would occur along the corridor edge in corridor miles 28, 29 and 30 also located on private timber lands. • Short-term impacts to recreational use of the Kootenai National Forest land located along Sheep Range Road would occur during construction. Because Sheep Range Road would be used to access portions of the transmission line during construction, use of the road would not be allowed during construction to protect the safety of recreational users. • New easement would be acquired on land owned by Lincoln County near Kootenai Falls. • Danger tree clearing would occur on county owned land at Cliffside Park near the Bighorn Terrace subdivision. • Danger tree clearing would occur on tribally owned land located along the historic Highway 2. • Construction of about 0.6 miles of new road, danger tree clearing and access road improvement/construction would remove a small amount of cover/forage habitat for bighorn sheep, whitetail deer, and mule deer in the Kootenai Falls 	<ul style="list-style-type: none"> • Additional and new corridor width would be needed along the entire 17 miles of existing transmission line to provide a 100-foot wide corridor. • Wider and new right-of-way would affect residents along Kootenai River Road near Bobtail Road. Removal of danger trees, a garage, a barn, and an outbuilding also would occur under Alternative 1. The centerline of the transmission line would be moved closer to residences in this area. • Wider right-of-way and danger tree clearing in the Bighorn Terrace subdivision and west of Highway 56 would affect residents who live in these areas. • Similar to the Proposed Action, construction related activities such as noise, road closures, and decreased air quality would affect landowners along the corridor. • Similar to the Proposed Action, use of public lands adjacent to private property or trespassing on private property as a result of project related activity could increase during and after construction. • About 9.8 acres of Kootenai National Forest land would be converted from forest to transmission line in miles 15 to 17 to widen the corridor from 60 to 100 feet. • About 8 acres of corridor clearing would occur in corridor mile 28 on private timber lands. Danger tree clearing would occur along the corridor edge in corridor miles 28, 29 and 30 also located on private timber lands. • Impacts to recreational use from of the Kootenai National Forest land located along Sheep Range Road would be similar to those under the Proposed Action. • New 100-foot wide easement would be acquired with corridor clearing on land owned by Lincoln County near Kootenai Falls. • Similar to the Proposed Action, danger tree clearing would occur on county owned land at Cliffside Park near the Bighorn Terrace subdivision. • Danger tree clearing and corridor clearing would occur on tribally owned land located along the historic Highway 2 as with the Proposed Action. • Corridor clearing, danger tree clearing and construction of 0.6 miles of access road within the Kootenai Falls Wildlife Management Area would remove a small amount of cover/forage habitat for bighorn sheep, whitetail deer, and mule deer. • Danger tree clearing would occur within the Inventoried Roadless Areas (IRAs) located along the transmission line corridor as with the Proposed Action. • Impacts to the Kootenai Falls Cultural Resource District would be similar 	<ul style="list-style-type: none"> • No direct impacts on land use would occur. • BPA's use of access rights granted by the existing easement or special use permit might increase over time as the line requires more maintenance. 	<ul style="list-style-type: none"> • Compensate landowners at market value for any new land rights required for clearing and right-of-way easements, or to construct new, temporary or permanent access roads. • Compensate landowners for damage to property during construction and maintenance. • Minimize or eliminate public access to project facilities through postings and installation of gates and barriers at appropriate access points and, at the landowner's request, on private property.

Potential Impacts			Mitigation Measures
Proposed Action	Alternative 1	No Action Alternative	
<p>Wildlife Management Area.</p> <ul style="list-style-type: none"> • Danger tree clearing could occur in the Inventoried Roadless Areas (IRAs) located along the transmission line corridor. • Replacement of structures, road improvement and construction of a bridge over China Creek would impact the Kootenai Falls Cultural Resource District by potentially disturbing archaeological sites. 	to the Proposed Action.		
Vegetation			
<ul style="list-style-type: none"> • No impacts to ESA-listed (water howellia and Spalding's catchfly) species or candidate species (linearleaf moonwort) are expected. • Removal of old structures and construction of new structures would impact an estimated 350-700 individual Geyer's biscuit-root (Forest Sensitive and Montana Species of Concern species). Construction of two of the new access roads has the potential to impact 150 or more individuals or subpopulations. One of the conductor tensioning sites would also disturb individual plants or subpopulations. • Structure replacement and road construction would remove vegetation and expose bare mineral soil possibly increasing weed migration into potential Geyer's biscuit-root habitat. • No impacts to common clarkia (Forest Sensitive) are expected although habitat disturbance could occur. • No impacts to Upswept moonwort (Forest Sensitive), wavy moonwort, and stalked moonwort (Forest Sensitive and Montana Species of Concern species) are expected although habitat disturbance could occur. • Danger tree removal and construction of about 300 feet of access road to structure 18/11 would occur within the edge-affected area of the designated old growth stand near Bobtail Creek. • Danger tree removal would occur within the edge-affected area of the designated old growth stand northwest of the Bighorn Terrace subdivision near structure 21/3. • Weeds from existing access roads and rights-of-way would be transported by vehicles to un-infested areas potentially increasing weed spread within and adjacent to the corridor posing a high risk to adjacent susceptible plant communities, specifically those in the Kootenai River corridor and the north facing slopes. ATVs used to transport people and equipment into this area would increase the risk of weed spread. 	<ul style="list-style-type: none"> • No impacts to ESA-listed (water howellia and Spalding's catchfly) species or candidate species (linearleaf moonwort) are expected from Alternative 1. • Impacts to Geyer's biscuit-root from removal of old structures and construction of new structures would be the same as those under the Proposed Action. • Wider right-of-way for Alternative 1 would remove more vegetation and expose a larger amount of bare mineral soil possibly increasing weed migration into potential Geyer's biscuit-root habitat. • No impacts to common clarkia (Forest Sensitive) are expected from Alternative 1 although habitat disturbance could occur. • No impacts to upswept moonwort (Forest Sensitive), wavy moonwort, and stalked moonwort (Forest Sensitive and Montana Species of Concern species) are expected from Alternative 1 although habitat disturbance could occur. • Alternative 1 would clear about 0.06 acres total of designated old growth habitat due to the greater clearing width needed for 230 kV. About 0.01 acres (436 square feet) within the 170-acre designated old growth stand near Bobtail Creek and about 0.05 acres (2,178 square feet) within the 35-acre designated old growth stand northwest of the Bighorn Terrace subdivision would be cleared. • Similar to the Proposed Action, the potential for the spread of weeds on the existing and additional new right-of-way and roads from Alternative 1 would increase with disturbance. • Impacts from operation and maintenance of Alternative 1 would similar to the Proposed Action. As with the Proposed Action, spread of weeds within the project area would result from vehicular travel and right-of-way vegetation management. 	<ul style="list-style-type: none"> • Impacts from emergency maintenance or structure replacement could occur to populations of Geyer's biscuit-root found within the existing corridor. • Impacts to roadside native species and Geyer's biscuit-root could occur from road spraying and weed spread. • Existing access roads and rights-of-way would continue to support weed populations; seeds would be spread by road maintenance equipment, as well as by other administrative and recreational traffic. Existing weeds are expected to continue moving from roadways and rights-of-way into previously disturbed areas and adjacent big game winter ranges and riparian areas. 	<ul style="list-style-type: none"> • Threatened and Endangered and Forest Sensitive Species: <ul style="list-style-type: none"> ➤ Cut or crush vegetation rather than blade, in areas that will remain vegetated in order to maximize the ability of plants to resprout. (Mitigation measure also listed in Geology, Soils, and Water Resources Section.) ➤ Limit soil disturbance and mineral soil exposure during construction activities. ➤ Flag populations of Geyer's biscuit-root for avoidance during construction. • Old Growth: <ul style="list-style-type: none"> ➤ Implement timing restrictions as described in Section 3.5.3 Wildlife/Mitigation to minimize disturbance and limit destruction of nests of birds that use old growth habitat and within bald eagle Nest Site Management Zones. ➤ Mitigate for impacts to designated and undesignated (on the Pipe Creek and Quartz Creek realignment options) old growth stands by purchasing private lands or conservation easements on private lands with old growth characteristics that may otherwise be developed or cleared for other purposes. BPA would purchase the lands prior to clearing in old growth areas. Any lands acquired for bald eagle mitigation that meet the definition of old growth habitat will also be acceptable for meeting mitigation objectives for old growth habitat. Details of the mitigation plan will be described in the Biological Assessment for bald eagles being prepared for this project. Table 3-22 provides a summary of proposed old growth habitat mitigation acres by alternative. • Noxious Weeds: <ul style="list-style-type: none"> ➤ Comply with federal, state and county weed control regulations and guidelines. ➤ Implement Forest Service Manual (FSM) 2080 Noxious Weed Management Prevention and control measures on all Kootenai National Forest lands. See Appendix E. ➤ Use certified weed-free forage/mulch if available on all Kootenai National Forest lands in Montana (36 FR 261.50). ➤ Pressure or steam wash all equipment before entering the project area and when leaving discrete patches of weeds. ➤ Flag or map weed populations prior to construction for avoidance. Clean vehicles after leaving those areas to avoid spread of weeds. ➤ Seed and fertilize newly constructed and restored roads after use with seed that meets the requirements of federal, state, and county weed control regulations and guidelines. ➤ Use certified weed-free straw for erosion control for all construction, reconstruction and restoration activities. ➤ Treat and sign sites if new invaders are located and defer ground disturbing activities within those sites until the weed specialist from Lincoln County or the Kootenai National Forest determines the site is no longer a threat, and approves those activities. ➤ Follow site-specific guidelines for weed treatments within or adjacent to known sensitive plant populations. All future treatment sites will be evaluated for sensitive plant habitat suitability; suitable habitats will be surveyed as necessary prior to treatment. ➤ Use the 1000 cubic yards of excess excavated material from 15/4 – 15/7 contaminated with spotted knapweed seed and other weed seeds in areas that have the same weed species. This material will not be used at sites relatively free of these species, such as the Pipe Creek, Quartz Creek, and Kootenai River Crossing realignments. ➤ Treat the Dalmatian toadflax populations located east of structure 21/3 and at the Troy Substation on the Lake Creek road with herbicide prior to any activity, to reduce the potential for plants producing seed to be

Potential Impacts			Mitigation Measures
Proposed Action	Alternative 1	No Action Alternative	
			<p>carried elsewhere.</p> <ul style="list-style-type: none"> ➤ Cooperate with Lincoln County for the treatment of the common tansy population from structure 26/1 to 26/9 with herbicide prior to any motorized travel to reduce the chance of spreading this species. ➤ Wash ATVs and other off-road vehicles before bringing them into the historic Highway 2 area. ➤ Cooperate with private, county, and federal landowners to treat the noxious weeds along the access roads that will be used to bring tree clearing and construction equipment into the Pipe Creek, Quartz Creek, and Kootenai River Crossing realignment areas, to reduce the amount of weed seed that could be available for dispersal. ➤ Wash all vehicles and construction equipment before beginning clearing and construction activities in the realignment areas, to help prevent the transport of weed seeds from areas that are already infested. ➤ Install gates and post signs on access roads to discourage recreational vehicular travel and subsequent weed seed transport. Gates could be installed in the following locations: near structure 17/13 and on the existing access road off Bobtail Road; where the corridor crosses Quartz Creek Road west of structure 19/3; on the existing access road near the new right-of-way crossing of Quartz Creek Road; on the existing access road near the new eastern angle structure for the Quartz Creek realignment; on the west side of Quartz Creek off USFS Road 601; and on the existing access road near structure 21/3. ➤ Revegetate the abandoned section between 19/4 and 21/4 if structures are removed and ground is disturbed. Apply all herbicides according to the labeled rates and recommendations to ensure the protection of surface water, ecological integrity and public health and safety. Herbicide selection will be based on target species on the site, site factors (such as soil types, distance to water, etc.), and with the objective to minimize impacts to non-target species. ➤ Conduct a post-construction weed survey to confirm whether or not noxious weeds have been spread within the project area, and take curative action if needed.
Floodplains and Wetlands			
<ul style="list-style-type: none"> • Removal of structures 22/4, 23/8, and 26/2 currently located in or near wetland areas would impact wetlands by crushing of vegetation, compacting or rutting of soil. • Construction of new structures would impact wetlands from crushing of vegetation or sedimentation from construction sites; water quality would be affected if sediment enters streams or covers wetland vegetation. About 0.25 acres around each structure would be disturbed during installation. • Structures 22/4, 23/8, and 26/2, located within wetlands or wetland buffer, would be relocated. Since the new locations may still be within wetland buffers, impacts would occur from disturbance of vegetation and soil. • Riparian wetlands would be impacted by clearing of vegetation and construction of a new bridge across China Creek. Other riparian wetlands along project streams would be impacted by tree clearing. • Impacts from improvement of existing access roads would occur from removal of vegetation and spills of chemicals, oils and pollutants from machinery. • Between structures 23/7 and 24/1, Sheep Range Road crosses through wetlands; a small amount of sediment could be introduced into wetlands immediately adjacent to the road from vehicular traffic mud splash if the road is used during the wet season. A portion of Sheep Range Road near the 	<ul style="list-style-type: none"> • Impacts to wetlands and floodplains from removal of existing wooden structures would be the same as those under the Proposed Action. • About 0.5-acres around each new 230-kV structure would be disturbed during installation possibly crushing or removing wetland buffer vegetation. As with the Proposed Action, structures 22/4, 23/8, and 26/2 would be relocated away from wetlands and wetland buffers as much as possible. • Impacts would be the same as those under the Proposed Action for the new access road and bridge through the riparian wetland of China Creek. • Impact from Alternative 1 to other riparian wetlands in the project area would be greater than the Proposed Action because more tree clearing to widen the corridor from 80 feet to 100 feet would occur. • Impacts to wetlands from road improvement would be the same as those under the Proposed Action. • Impacts from operation and maintenance of Alternative 1 would be similar to those under the Proposed Action although wider right-of-way would require more clearing of vegetation and application of herbicides for noxious weed control. • Impacts from construction of new structures in Pipe and Bobtail creek floodplains would be similar to those under the Proposed Action. Additional tree clearing to widen the corridor to 100 feet would increase the potential for soil compaction in the floodplains. • Impacts from construction of tensioning sites in the Kootenai River 	<ul style="list-style-type: none"> • There is the potential for disturbance to wetlands and floodplain functions from structure replacement, vegetation management activities, and access road improvements. • New impacts to wetlands and floodplains could result when transmission structures fail and require immediate repair. 	<ul style="list-style-type: none"> • Obtain and comply with applicable Clean Water Act permits for all work in wetlands or streams. • Comply with the terms and conditions of applicable State of Montana Water Quality Act and Streambed Preservation Act permits for all work in wetlands and streams. • Identify and flag wetlands before construction for avoidance. • Locate structures, roads, staging areas and tensioning sites to avoid wetlands and floodplains as much as possible. • Avoid construction within wetlands and wetland buffers to protect wetland functions and values, where possible. The wetland buffer width on federal land is 150 feet from the wetland boundary and 50 feet from the wetland boundary on all other lands. • Avoid mechanized land clearing within wetlands and riparian areas to minimize soil compaction from heavy machinery, destruction of live plants, and potential alteration of surface water patterns. • Install erosion control measures such as silt fences, straw mulch, straw wattles, straw bale check dams, other soil stabilizers, and reseed disturbed areas as required; a Stormwater Pollution Prevention Plan would be prepared. • Use herbicides to control vegetation near wetlands in accordance with the Transmission System Vegetation Management Program (BPA 2000), to limit impacts to water quality. • Use existing road systems, where possible, to access structure locations and for the clearing of the transmission line corridor. • Deposit all excavated material not reused in an upland area and stabilize. • Locate structures to minimize the potential for creating obstructions to floodwaters. • Recontour and revegetate disturbed areas near floodplains with native and local species.

Potential Impacts			Mitigation Measures
Proposed Action	Alternative 1	No Action Alternative	
<p>spring in Wetland 10 would need to have a drainage structure installed to retain the spring's connectivity with the Kootenai River.</p> <ul style="list-style-type: none"> The existing access road between structures 26/2 and 26/5 would cross approximately 0.6 acres of springs; drainage structures would be installed in that road to allow the spring water to connect to slopes and water systems below the road. Fill would be needed to provide a road bed. Operation and maintenance would cause impacts to wetlands from vegetation maintenance activities or the application of herbicides for noxious weed control. Most wetlands and wetland buffers within the corridor are dominated by tree species that at times would need to be cut. Use of access roads during wet periods for structure maintenance would affect wetlands by introducing sediment through vehicular traffic mud splash, potentially affecting water quality. One structure currently located in the Bobtail Creek floodplain would be moved about 10 feet closer to the stream. Impacts to floodplains would occur from soil compaction, rutting, and removal of riparian vegetation. Four to five conductor tensioning sites would be located in the Kootenai River floodplain. Conductor tensioning sites need to be relatively flat which would require soil disturbance and compaction within the floodplain. About 0.6 miles of new road would be constructed in the Kootenai River floodplain to access the line near structure 22/1 and to cross China Creek; soil disturbance and compaction would occur within 75 feet of the Kootenai River. Impacts to the Kootenai River floodplain from improvement of Sheep Range Road or would occur from widening the road and potentially increasing the potential for sediment delivery to the Kootenai River. Operation and maintenance activities would impact floodplains from soil compaction and removal of vegetation. 	<p>floodplain would be the same as those under the Proposed Action.</p> <ul style="list-style-type: none"> Impacts from construction of about 0.6 miles of new road in the Kootenai River floodplain would be the same as those under the Proposed Action Impacts from improvement of Sheep Range Road located in the Kootenai River floodplain would be the same as those under the Proposed Action. Impacts from operation and maintenance of Alternative 1 would be the same as those under the Proposed Action. 		
Wildlife			
<ul style="list-style-type: none"> Common Wildlife Species <ul style="list-style-type: none"> The osprey nests located north of existing structure 22/4 and on top of existing structure 28/2 would be impacted during construction. The nest on 28/2 would be removed prior to construction before or after the nesting season depending on the time of year construction would begin. This could cause displacement or abandonment of the osprey nest site. The other nest would be disturbed from construction along the existing corridor near structure 22/4. The risk for line collision would be only slightly increased as the line would be rebuilt in the same location with the same type of structures. However, placement of overhead ground wire on structures for 	<ul style="list-style-type: none"> Common Wildlife Species <ul style="list-style-type: none"> Impacts to common wildlife species from Alternative 1 would be greater than the Proposed Action because the corridor would be widened from 80 feet to 100 feet. Big game animals would have less cover than under the Proposed Action, but impacts from danger tree clearing and new road construction outside the corridor would be the same as the Proposed Action. Alternative 1 would increase open road densities and decrease habitat effectiveness for some big game species, and smaller mammals also would be affected by removal of cover within their habitat. Impacts to osprey would be the same as the Proposed Action. The risk of bird strikes under Alternative 1 would greater than the 	<ul style="list-style-type: none"> Common Wildlife Species <ul style="list-style-type: none"> Impacts on common wildlife species would be similar to those under the Proposed Action. Impacts on migratory bird nesting, foraging, and roosting habitat would be similar to the Proposed Action. Potential for line collision would be similar to the Proposed Action. 	<ul style="list-style-type: none"> Grizzly bear <ul style="list-style-type: none"> Implement any mitigation measures for grizzly bear that may be required by the USFWS through Section 7 consultations for the Proposed Action. Measures could include avoidance of certain locations during the den emergence period, restricting construction noise levels in certain areas, and provision of compensation for project effects. Design action alternatives and realignment options to reduce grizzly bear mortality risk due to human-bear encounters. All construction and maintenance crews will observe proper storage of food, garbage, and other attractants within grizzly bear habitat as specified in the Kootenai National Forest Food Storage Order (Special Order, Kootenai National Forest, 2001; Occupancy and Use Restrictions and Food Storage for the Cabinet/Yaak Ecosystem). Implement mitigation for action alternatives and realignment options that will increase core habitat and decrease TMRD in BMU 10. The removal of ten gates and the installation of earthen barriers on roads in BMU 10 that are currently closed year round to motorized travel will occur. This work would be done in conjunction with Kootenai National Forest proposed mitigation for upcoming fuels reduction work in

Potential Impacts			Mitigation Measures
Proposed Action	Alternative 1	No Action Alternative	
<p>about one mile out of the substations at either end of the line could increase the "fence" effect and contribute to potential bird strikes in those areas.</p> <ul style="list-style-type: none"> • Gray wolf: Effects on gray wolf would be minimal. • Grizzly bear <ul style="list-style-type: none"> ➢ Bear Management Unit 10: Potential impacts to grizzly bear would occur during construction because of the two to three weeks of helicopter use and its impact on habitat effectiveness, and the addition of new access roads and their effect on linear Open Road Density (ORD) and Open Motorized Route Density (OMRD). After construction is complete, potential impacts to grizzly bear would decrease. ➢ Bear Management Unit 1: Potential impacts to grizzly bear would occur during construction because of the two to three weeks of helicopter use and its impact on habitat effectiveness, and the addition of new access roads and their effect on linear ORD and OMRD. After construction is complete, potential impacts to grizzly bear would decrease. ➢ Bear Outside Recovery Zones: The percentage of OMRD and linear Total Motorized Route Density (TMRD) would remain unchanged within the West Kootenai and Troy Bear Outside Recovery Zone (BORZ) polygons. • Bald eagle <ul style="list-style-type: none"> ➢ Inside Management Zones I and II: About 0.5 acres for a new access road would be cleared in Management Zones I and II of the Hunter Gulch nest. A total of 27.5 acres of edge affected area would be impacted within the Management Zones I and II for all four nests. Suitable nesting, perching, and roosting trees would be removed within this edge affected area of the Quartz Creek, Hunter Gulch and Kootenai Falls nests resulting in impacts to nest site habitat suitability and integrity of the breeding area. ➢ Outside Management Zones I and II: The total acres of canopy removed outside of the Zones I and II of the four nests would be about 6.1 acres. About 100.5 acres of edge affected area outside Zones I and II but within Zone III (home range) would be affected resulting in impacts to suitable foraging habitat. ➢ There would a slight increase in the risk for bald eagle line collision as the line would be rebuilt in the same location with the same type of structures. ➢ In the area near the Pipe Creek nest, there is a distribution line that would remain in the lower position of the rebuilt structures. Because of this line, there is an increased possibility for bald eagle electrocutions in this area because collision or electrocution occurs more often 	<p>Proposed Action. The taller steel structures (average height of 95 feet) would have a stacked configuration (conductors at various heights) which can create a "fence effect," or a larger area in which birds must avoid obstacles. The risk would be greater for waterfowl where the transmission line crosses the Kootenai River.</p> <ul style="list-style-type: none"> • Gray wolf: Effects on gray wolf from Alternative 1 would be similar to those under the Proposed Action. • Grizzly bear: Potential impacts to grizzly bear, similar to the Proposed Action, would occur during construction from the two to three weeks of helicopter use and its impact on habitat effectiveness, and the addition of new access roads and their effect on linear ORD and OMRD. After construction is complete, potential impacts to grizzly bear would decrease. <ul style="list-style-type: none"> ➢ Bear Management Unit 10: Potential impacts to grizzly bear within BMU 10 would be the same as those under the Proposed Action. ➢ Bear Management Unit 1: Potential impacts to grizzly bear within BMU 1 would be the same as those under the Proposed Action. ➢ Bear Outside Recovery Zones: Similar to the Proposed Action, the percentage of OMRD and linear TMRD would remain unchanged within the West Kootenai and Troy BORZ polygons. • Bald eagle <ul style="list-style-type: none"> ➢ Inside Management Zones I and II: Under Alternative 1, a total of 6.4 acres of canopy removal would occur inside Management Zones I and II of the four nests and a total of 20.7 acres of edge affected area would be impacted. Removal of suitable nesting trees in the edge affected area would impact nest site habitat suitability and integrity of the breeding area. Clearing of canopy within the management zones would move the edge of the corridor closer to the nests. Taller structures with conductors placed in a stacked configuration could increase strikes for birds flying between the Kootenai River and the nests. ➢ Outside Management Zone I and II: Under Alternative 1, the total acres of canopy that would be removed outside of Zones I and II is about 21.7 acres. Approximately 66.3 acres of edge affected area outside the management zones would be affected. ➢ Alternative 1 would have a greater potential for impact on bald eagle mortality than the Proposed Action. Taller structures with conductors placed in a stacked configuration would increase the potential strikes for birds flying between the Kootenai River and the nests. Near the Pipe Creek nest, the distribution line that would remain in the lower position of the rebuilt structures would increase the potential for bald eagle electrocutions. • Peregrine falcon: Effects on peregrine falcon would be the same as those under the Proposed Action. • Pileated woodpecker: Effects on pileated woodpecker would occur from clearing of about 0.01 acres (436 square feet) within the designated stand near Bobtail Creek and about 0.05 acres (2,178 square feet) within the designated stand northwest of Bighorn Terrace. Approximately 134 preferred trees and 3 snags would be removed in pileated woodpecker 	<ul style="list-style-type: none"> • Gray wolf: Effects on gray wolf from No Action would be similar to those under the Proposed Action. • Grizzly bear: Potential impacts to grizzly bear both inside and outside the bear management units from No Action would be minimal because no construction that would affect grizzly bear habitat is expected. • Bald eagle <ul style="list-style-type: none"> ➢ Inside Management Zones I and II: Canopy removal is not expected within the four nest sites Management Zones I and II crossed by the existing transmission line with the exception of hazard trees removed as part of normal maintenance operations. ➢ Outside Management Zones I and II: Right-of-way clearing outside Zones I and II is not expected. • Peregrine falcon: Maintenance of the existing transmission line could result in a slight potential for disturbance to an active peregrine falcon nest should helicopter use be required during nesting season. • Pileated woodpecker: Vegetation management is not expected within effective or replacement old growth habitat and thus would not affect pileated woodpeckers. • Northern goshawk and Flammulated owl: Vegetation management is not expected to remove potential nesting or foraging habitat. • Harlequin duck: Effects on harlequin duck would be similar to the Proposed Action. • Elk and White-tailed deer: Impacts such as removal of cover/forage from ongoing maintenance activities for the 	<p>BMU 10. Earthen barriers will make access to closed areas more difficult for motorized vehicles, thus increasing core habitat and reducing overall road density. The drainages and roads are as follows: Lost Fork Creek (Roads 6164, 4653 and 4653 D); Big Foot - Seventeen Mile Creek (Roads 4681 B, C, D, E, F and G); and West Fork Quartz Creek (Roads 4690 F, and 4691). Roads 14470, 14471, 14473 and 14474 will be "placed into storage" rather than removing gates, because they are behind other roads where gates would be removed. Placing roads into storage could entail culvert removal and subsequent recontouring of the stream banks.</p> <ul style="list-style-type: none"> ➢ Remove the gate on the 402 D spur (in BMU 1) in Cedar Creek and install an earthen barrier. This spur road is currently closed year round to motorized travel. ➢ Install earthen barriers in the West Kootenai BORZ, to close approximately 4.1 miles of road currently open to motorized travel. All roads are located in the Quartz Creek drainage and include Roads 6145, 6704, 6704 A, and 5222. ➢ Use of high intensity motorized disturbance (such as heavy equipment or helicopter use) will not occur in BMUs 10 and 1 between April 1 and June 15 during the grizzly bear den emergence and spring period. This includes: the west leg of the Quartz Creek realignment off Lower Quartz Creek Road #601; existing structures 21/5 to 27/9 along Sheep Range Road; and the historic Highway 2. <ul style="list-style-type: none"> • Bald eagle <ul style="list-style-type: none"> ➢ Implement any mitigation measures for bald eagle that may be required by the USFWS through Section 7 consultations for the Proposed Action. Measures could include avoidance of certain locations during the nesting periods, restricting construction noise levels in certain areas, and provision of compensation for project effects. ➢ Implement mitigation for project activities within the primary use areas of the four nests, by purchasing private lands or conservation easements on private lands that may otherwise be developed or cleared for other purposes. Acres required for compensation would equal 100% of the area to be cleared of all tall growing vegetation, as well as a portion of the area that falls within the edge affected area that currently supports trees suitable for bald eagle perching, roosting, and/or nesting. ➢ Use of high intensity motorized disturbance (such as heavy equipment or helicopter use) will not occur between February 1 and August 15 within the primary use areas of an active nest during the nesting and fledging period. This includes: the Pipe Creek realignment; existing structures 17/6 to 18/3; the west leg of the Quartz Creek realignment; existing structures 20/9 to 21/5; the Kootenai River crossing realignment; and existing structures 25/1 to 26/1. A preconstruction survey of the four nests will be done to determine if nests are active. No timing restrictions would apply if nests are not active. • Peregrine falcon: Use of high intensity motorized disturbance (such as heavy equipment or helicopter use) will not occur between March 15 and August 31 within 0.5 miles of an active nest. This includes the areas between existing structures 26/5 to 27/3. The peregrine falcon nesting area west of Kootenai Falls will be surveyed in April-May 2008 to determine location of nest. If no nest is present timing restrictions would not apply. • Pileated woodpecker, northern goshawk, and flammulated owl: Use of high intensity motorized disturbance (such as heavy equipment or helicopter use) will not occur between April 1 and July 15 within the old growth stands near Bobtail Creek and northwest of the Bighorn Terrace subdivision. This mitigation applies to the Proposed Action, Alternative 1, the Pipe Creek realignment option, and the Quartz Creek realignment option. • Bighorn sheep: Use of high intensity motorized disturbance (such as heavy equipment or helicopter use) will not occur between April 1 and June 30 within the Kootenai Falls Wildlife Management Area during the bighorn sheep lambing period. This includes the areas along Sheep Range Road between existing structures 21/6 to 24/7. • Osprey: Use of high intensity motorized disturbance (such as heavy equipment or helicopter use) will not occur between April 1 and August 31 within the primary use area of an active nest. This includes the areas between: existing structures 27/7 to 28/6 (the current nest is located on top of structure 28/2); existing structures 22/1 to 23/1 (the current nest is located near structure 22/4).

Potential Impacts			Mitigation Measures
Proposed Action	Alternative 1	No Action Alternative	
<p>with distribution lines.</p> <ul style="list-style-type: none"> • Peregrine falcon: Effects on peregrine falcon would most likely occur from helicopter disturbance during construction activities during the nesting and fledging periods. • Pileated woodpecker: Effects on pileated woodpecker would occur from removal of trees in old growth stands and from removal of approximately 40 live trees preferred by pileated woodpecker for nesting (greater than or equal to 20" dbh). • Northern goshawk: Effects on northern goshawk would occur from clearing of about 8.6 acres within nesting and/or foraging habitat. Suitable nesting habitat is located between structures 18/8 and 19/5, 21/5 and 25/8, and just east of 26/1 to 28/2. • Flammulated owl: Effects on flammulated owl would occur from clearing of about 3.3 acres within potential nesting and/or foraging habitat. Suitable nesting habitat is located between structures 18/8 and 19/5, 21/5 and 25/8, and just east of 26/1 to 28/2. • Harlequin duck: Effects on harlequin duck would be minimal. • Elk and White-tailed deer: Effects on elk and white-tailed deer would occur from changes to cover/forage ratio and opening sizes. Clearing of trees would decrease cover/forage from tree removal although adequate security for elk and deer would remain within or along the transmission line corridor. • Bighorn sheep: About 0.4 acres of canopy would be removed within the Kootenai Falls Wildlife Management Area although relatively secure corridor for animals to forage close to cover would remain. 	<p>nesting habitat under Alternative 1.</p> <ul style="list-style-type: none"> • Northern goshawk: Loss of potential goshawk foraging habitat under Alternative 1 would be about 26.8 acres with potential removal of about 71 suitable goshawk nest trees. • Flammulated owl: Loss of potential owl foraging habitat under Alternative 1 would be about 16.8 acres with potential removal of 3 suitable owl nest trees. • Harlequin duck: Effects on harlequin duck would be similar to the Proposed Action although the potential for collision could increase with the taller 230-kV structures. • Elk and White-tailed deer: Effects to elk and white-tailed deer from Alternative 1 would be similar to the Proposed Action except additional tree canopy would be removed. • Bighorn sheep: About 9.1 acres of canopy would be removed within the Kootenai Falls Wildlife Management Area although relatively secure corridor for animals to forage close to cover would remain. 	<p>existing transmission line and right-of-way would occur as the transmission line ages and emergency repairs are needed more frequently.</p> <ul style="list-style-type: none"> • Bighorn sheep: Current levels of ongoing maintenance activities for the existing transmission line would continue, such as the removal of hazard trees which would decrease cover/forage for sheep. 	
Fish, Amphibians, and Reptiles			
<ul style="list-style-type: none"> • Removal of large trees in the Riparian Habitat Conservation Areas (RHCA) could impact fish if sediment generated during removal enters the streams. • Placement of the tensioning site at 18/11 could impact Bobtail Creek if construction generated sediment enters the stream. • Corridor clearing within the wetland buffer or riparian areas could displace amphibians and reptiles or disturb their habitat. • Coeur d'Alene salamanders could be displaced from their habitat or killed where the existing corridor runs parallel to the historic Highway 2. • Short-term increases of small amounts of sediment are expected from construction activities such as timber clearing and road improvement/construction. • About 1.0 acres of clearing would occur in the riparian area of fish bearing streams. 	<ul style="list-style-type: none"> • Impacts to fish, amphibians, and reptiles from tensioning site placement and road improvement and construction would be similar to the Proposed Action. • Effects to aquatic habitat from timber clearing for Alternative 1 would be slightly greater than those under the Proposed Action. The existing 80 foot transmission line corridor would be cleared to 100 feet in width so more trees within aquatic habitat would be removed with the potential for greater amounts of sediment delivered to streams. • About 1.4 acres of clearing would occur in the riparian area of fish bearing streams. 	<ul style="list-style-type: none"> • Fires and suppression efforts could introduce sediment into fish bearing streams or increase water temperature. • Impact on boreal toads would occur within wetlands or riparian habitats from emergency or other access to structures located in wetlands. 	<ul style="list-style-type: none"> • Implement any mitigation measures for white sturgeon and bull trout that may be required by the USFWS through Section 7 consultations for the Proposed Action. Measures could include provision of buffer zones to avoid sediment generated during construction from entering project area streams and leaving woody debris in certain areas. • Implement RHCAs (buffer zones) around all project area rivers, streams and wetlands. For the following fish bearing streams, 300 feet on each side of the stream would be buffered: Kootenai River, Pipe Creek, Bobtail Creek, Quartz Creek, and China Creek. • Remove trees within the RHCAs without the use of heavy equipment. • Leave low growing brush species uncut with the RHCAs. • Leave large-diameter trees felled within corridor RHCAs. This would leave recruitable (trees that are ready to fall into the stream) large woody debris within the RHCAs of project area streams. • Conduct surveys for presence of Coeur d'Alene salamanders during wet weather in May or June during the year when transmission line construction would occur. The areas which have a high probability of occurrence are located on the south side of the Kootenai River in Section 18 (T31N, R32W) for the Kootenai River Crossing Realignment and in Sections 13 and 14 (T31N, R33W) for the Kootenai River Crossing Realignment and existing corridor. High probability areas would be searched in the immediate area planned for disturbance, such as structure locations. The outer boundary of the disturbance zone around each structure would be identified and

Potential Impacts			Mitigation Measures
Proposed Action	Alternative 1	No Action Alternative	
			marked on the ground. Salamanders present in the area would be collected and moved at least 100 feet to similar habitat beyond the potential disturbance zone.
Visual Resources			
<ul style="list-style-type: none"> The existing line would be straightened just west of Central Road (structures 17/16 and 17/17) for approximately 500 feet and placed along the north side of Kootenai River Road with slightly taller single-wood-pole structures with stand-off insulators. Clearing of trees for new and additional right-of-way would open up views of the new structures and conductors from residences along Kootenai River Road between Pipe and Bobtail Creeks. Danger tree removal in the Bighorn Terrace subdivision would open up views of the existing line currently partially screened from view. Road construction and improvement would remove low growing vegetative screening in this area, further opening up views of the corridor. Danger tree removal combined with topographically low areas would allow views of some of the new taller structures west of Black Eagle Rock from viewers on the Kootenai River, Sheep Range Road, and Highway 2. Short-term construction activities within the corridor would introduce new shapes, lines, and elements into the visual environment such as structures, bolts, conductor reels, insulators, and culverts. At Viewpoints 1, 2, and 3 the Visual Quality Objective (VQO) of partial retention would continue to be met. At Viewpoint 4 the VQO of modification would continue to be met. 	<ul style="list-style-type: none"> The transmission line would be straightened just west of Central Road (structures 17/16 and 17/17) for approximately 500 feet and placed along the north side of Kootenai River Road with taller steel pole structures and six conductors. Clearing of trees for new and additional right-of-way would open up views of the new steel structures and conductors from residences along Kootenai River Road between Pipe and Bobtail Creeks. In corridor miles 18 and 19, additional clearing and new steel poles would increase the line's visibility on the east and west slopes of Bobtail Ridge. West of Bobtail Ridge to Quartz Creek Road, the new line would be visible especially from residences located north of the line. Danger tree removal and corridor clearing in the Bighorn Terrace subdivision would open up views of the existing line currently partially screened from view. Road construction and improvement would remove low growing vegetative screening in this area, further opening up views of the corridor. At the west end of Kootenai River Road, the taller, heavier, and more industrial-looking structure on top of Black Eagle Rock would be visible. Danger tree removal and corridor clearing would allow views of the new taller, steel structures above the trees west of Black eagle Rock from viewers on the Kootenai River, Sheep Range Road, and Highway 2. The new steel structures would be visible where the line crosses Highway 2 and heads west along historic Highway 2 to Troy Substation. In the residential area west of Bull Lake Road and south of Highway 2, residents would see the new steel structures from homes and back yards. Similar to the Proposed Action, short-term construction activities within the corridor would introduce new shapes, lines, and elements into the visual environment such as structures, bolts, conductor reels, insulators, and culverts. At Viewpoints 1, 2, and 3 the VQO of partial retention would not be met. At Viewpoint 4 the VQO of modification would not be met. 	<ul style="list-style-type: none"> The existing transmission line would continue to be visible. No new visual impacts would be expected unless maintenance required new access roads or new structures. New access roads and structure would disturb or remove vegetative screening making portions of the line more visible. 	<ul style="list-style-type: none"> Use existing vegetation and topography whenever possible to limit views of the line and structures. Preserve vegetation within the 80-foot or 100-foot-wide right-of-way that would not interfere with the conductor or maintenance access needs, such as small trees and shrubs. Locate construction staging and storage areas away from locations that would be clearly visible from Kootenai River Road or Highway 2. Colorize all steel structures a dark gray color. Use non-reflective conductors. Use non-reflective insulators (i.e., non-ceramic insulators or porcelain). Locate access roads within previously disturbed areas, wherever possible. Revegetate all disturbed areas with approved species. Require that contractors maintain a clean construction site and that the corridor is kept free of litter after construction.
Cultural Resources			
<ul style="list-style-type: none"> Removal of existing structures and construction of new structures would disturb 5 known prehistoric sites (24LN174, 24LN202, 24LN203, 24LN233/24LN234 and 24LN183). Construction of tensioning sites would impact prehistoric sites within the Kootenai Falls Cultural Resource District (24LN1825) and proposed Traditional Cultural Property (TCP) sites. Five known prehistoric sites (24LN174, 24LN175, 24LN176, 24LN180, and 24LN181) located within the project area would be disturbed by road construction and improvement. One of the six known historic mining sites (24LN201) would 	<ul style="list-style-type: none"> Removal of existing structures and construction of new structures would disturb 5 known prehistoric sites (24LN174, 24LN202, 24LN203, 24LN233/24LN234 and 24LN183). Excavation of larger footing holes for Alternative 1 would potentially disturb more area within the known sites. Similar to the Proposed Action, construction of tensioning sites would impact prehistoric sites within the Kootenai Falls Cultural Resource District (24LN1825) and proposed TCP sites. Similar to the Proposed Action, five known prehistoric sites (24LN174, 24LN175, 24LN176, 24LN180, and 24LN181) located within the project area would be disturbed by road construction and improvement. 	<ul style="list-style-type: none"> Impacts to cultural resources would occur if emergency maintenance activities such as structure replacement or conductor splicing disturb cultural sites. Use of the Sheep Range Road during the wet season would continue to disturb known sites. 	<ul style="list-style-type: none"> Design the transmission line so that structure sites are placed to avoid cultural resources. Design new access roads to avoid cultural resources. Place geotextile fabric with rock/gravel overlay on the archaeological sites along Sheep Range Road to reduce or eliminate adverse impacts to those sites. Improve the existing access road system in a manner that minimizes new roads and avoids cultural resource sites. If improvements are needed on existing access roads, such improvements would be limited to the existing roadbed if near a cultural resource site and would be confined to applying new material. Excavation for roads will not occur near cultural resource sites. Remove the existing structures for the portion of existing transmission line that would be abandoned in the China Creek area if the Kootenai River Crossing realignment is selected, by cutting off at the base. Structures will then be removed by helicopter and or cut and removed.

Potential Impacts			Mitigation Measures
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<p>be affected by excavation for structure construction.</p> <ul style="list-style-type: none"> One known historic logging site (24LN778) would be affected by removal and construction of 15 structures and improvement of access roads to those structures. Impacts to portions of the historic Highway 2 (24LN237/24LN462) would occur from ATV use during construction. Heavy equipment use and vehicular traffic within known sites would disturb or destroy cultural resources. Rebuilding the line at the existing crossing near China Creek would impact the tribal ethnographic and cultural resources in the vicinity of the Kootenai Falls, both directly from structure and road construction, and indirectly from visual impacts. 	<ul style="list-style-type: none"> One of the six known historic mining sites (24LN201) would be affected by excavation for structure construction for Alternative 1. One known historic logging site (24LN778) would be affected by removal of 15 structures, construction of 5 new structures, and improvement of access roads to those structures. Similar to the Proposed Action, impacts on portions of the historic Highway 2 (24LN237/24LN462) would occur from ATV use during construction. Heavy equipment use and vehicular traffic within known sites would disturb or destroy cultural resources. Similar to the Proposed Action, rebuilding the line at the existing crossing and near China Creek would impact the tribal ethnographic and cultural resources in the vicinity of the Kootenai Falls. 		<ul style="list-style-type: none"> Consult with the Kootenai National Forest, Montana State Historic Preservation Officer (SHPO), and the Confederated Salish and Kootenai Tribes (CSKT) Tribal Historic Preservation Officer (THPO) regarding National Register of Historic Places (NRHP) eligibility of cultural sites and TCPs. Develop an Inadvertent Discovery Plan that details crew member responsibilities for reporting in the event of a discovery during construction. Ensure tribal monitors from the CSKT and Kootenai of Idaho are present during excavation within prehistoric sites or TCPs. Prevent unauthorized collection of cultural materials by ensuring a professional archaeologist and tribal monitor are present during any excavation within known sites. Prepare a Mitigation Plan to protect sites in-situ if final placement of project elements results in unavoidable adverse impacts to a significant cultural resource. Stop work immediately and notify local law enforcement officials, appropriate BPA personnel, the Kootenai National Forest, Montana SHPO, and the CSKT THPO if cultural resources, either archaeological or historical materials, are discovered during construction activities.
Recreation Resources			
<ul style="list-style-type: none"> Increased traffic levels would be expected on many of the project area roads during the construction season. Recreationists would be temporarily deterred from using certain areas due to noise, traffic, and dust, and for safety reasons. Short-term impacts to recreational use of the Kootenai National Forest land located along Sheep Range Road would occur during construction. Because Sheep Range Road would be used to access portions of the transmission line during construction, use of the road would not be allowed during construction to protect the safety of recreational users. ORV trespass of access roads would continue to occur. <p>Recreation Opportunity Spectrum Analysis</p> <ul style="list-style-type: none"> Access – Widening of the Bighorn Trail (Sheep Range Road) to allow wider and heavier vehicles to access the line between structures 21/6 and 25/8 would change the recreational user’s experience from hiking a trail to walking a road. On the other hand, proposed clearing and access road improvements largely would have a positive impact on hunting opportunities by allowing easier travel by hunters and easier viewing of big game animals. Social Encounters – Road widening could detract from the recreational user’s experience decreasing social encounter as visitors use other locations for their activities. Visitor Management – Visitor regulation and control would be increased under the Proposed Action. New roads on Kootenai National Forest lands would be closed to public motorized use to protect wildlife and watershed values. Visitor Impacts – Each segment of new road required for the transmission line rebuild would be closed by gate to public motorized travel to protect wildlife and watershed values. Visitors opposed to road closures may vandalize gates and signs. ORV users would circumvent gates to use new roads and would develop new routes from the roads where terrain is suitable. Such use would spread noxious weeds, eliminate vegetation and result in erosion. 	<ul style="list-style-type: none"> Impacts to recreation from Alternative 1 would be similar to those under the Proposed Action. 	<ul style="list-style-type: none"> If access for emergency maintenance work occurs during periods of wet soils, roads and trails used for recreation could be rutted. 	<ul style="list-style-type: none"> Improve trail surfaces by applying small-diameter compactable crushed rock. Monitor gates to assure effectiveness as necessary.

Potential Impacts			Mitigation Measures
Proposed Action	Alternative 1	No Action Alternative	
Noise, Public Health and Safety			
<p>Noise</p> <ul style="list-style-type: none"> • About 44 of the homes in the Pipe Creek area, Bighorn Terrace subdivision, and west of Highway 56 are within 800 feet of the construction activity and may experience noise levels at or above 65 dBA. • Residents within approximately 1 mile of helicopter use would be exposed to temporary noise levels above 65 dBA. Some residents may perceive air pressure changes as vibrations from the helicopter use. • Foul-weather corona noise levels would be comparable to or less than those from the existing line. • On and off the right-of-way, the levels of audible noise from the Proposed Action during foul weather would be well below the 55-dBA level that can produce interference with speech outdoors (estimated L_{dn} at the edge of the 80-foot right-of-way would be about 15 dBA or less, which is well below the EPA L_{dn} guideline of 55 dBA and also well below the Montana limit for L_{dn} of 50 dBA.) • Potential radio or television interference. <p>Public Health and Safety</p> <ul style="list-style-type: none"> • The Proposed Action would easily meet BPA’s electric-field guideline of 5 kV/m and Montana’s guideline of 1 kV/m at the edge of the right-of-way. • Impacts from magnetic fields would be less than those present on and near the existing line. 	<p>Noise</p> <ul style="list-style-type: none"> • Impacts from noise under Alternative 1 would be the same as those under the Proposed Action. • Potential radio or television interference. <p>Public Health and Safety</p> <ul style="list-style-type: none"> • Alternative 1 would easily meet BPA’s electric-field guideline of 5 kV/m and Montana’s guideline of 1 kV/m at the edge of the right-of-way. • Similar to the Proposed Action, impacts from magnetic fields would be less than those present on and near the existing line. 	<ul style="list-style-type: none"> • Existing conductor fittings have failed in the recent past causing fires and the transmission line to go out of service. Additionally, as wood pole structures continue to age, there is the potential for failures especially during adverse weather. The potential for these types of failures would increase as the line ages. 	<ul style="list-style-type: none"> • Install sound-control devices on all construction equipment. • Muffled exhaust will be installed on all construction equipment and vehicles except helicopters. • Limit construction activities to daytime hours (i.e., only between 7:00 am and 7:00 pm). • Notify landowners directly impacted along the corridor prior to construction activities, including blasting. • Prepare and maintain a safety plan in compliance with Montana requirements prior to starting construction. This plan will be kept on-site and will detail how to manage hazardous materials such as fuel, and how to respond to emergency situations. • Hold crew safety meetings during construction at the start of each workday to go over potential safety issues and concerns. • Secure the site at the end of each workday to protect equipment and the general public. • Train employees as necessary, in structure climbing, cardiopulmonary resuscitation, first aid, rescue techniques, and safety equipment inspection. • Fuel all highway-authorized vehicles off-site to minimize the risk of fire. Fueling of construction equipment that is transported to the site via truck and is not highway authorized will be done in accordance with regulated construction practices and state and local laws. Helicopters will be fueled and housed at local airfields or at staging areas. • Ensure that helicopter pilots and contractors take into account public safety during flights. • Ensure that safety measures for blasting will be consistent with state and local codes and regulations. All explosives will be removed from the work site at the end of the workday or placed under lock and key. • Adhere to BPA’s specifications for grounding fences and other objects on and near the existing and proposed rights-of-way during construction. • Construct and operate the rebuilt transmission line in accordance with the National Electrical Safety Code, as required by law. • Restore reception quality if radio or television interference occurs as a result of the rebuilt transmission line. Reception will be as good or better than before the interference. • Carry fire suppression equipment including (but not limited to) shovels, buckets, and fire extinguishers on all operation and maintenance vehicles. • Use established access roads during routine operation and maintenance activities. • Clear vegetation according to BPA standards to avoid contact with transmission lines. • Use pressure treated wood poles or poles treated with preservatives that do not contribute contaminants to nearby water bodies. • Contact the appropriate BPA representative if hazardous materials, toxic substances, or petroleum products are discovered within the project area that would pose an immediate threat to human health or the environment. Other conditions such as large dump sites, drums of unknown substances, suspicious odors, stained soil, etc. will also be reported immediately to BPA.
Social and Economic Resources			
<ul style="list-style-type: none"> • Potential benefit to local and regional economies through employment opportunities and purchase of goods and services. • Increased demand on local emergency response resources such as fire, police, and medical personnel and facilities. 	<ul style="list-style-type: none"> • Alternative 1 may have a low-level, short-term negative impact on property values from widening of the corridor although long-term impacts in the project area are not expected. 	<ul style="list-style-type: none"> • Negative socioeconomic impacts, primarily those associated with reduced reliability and increased maintenance access requirements could occur with No Action. 	<ul style="list-style-type: none"> • Compensate landowners at market value for any new land rights required for corridor easements or to acquire new, temporary or permanent access roads on private lands.

Potential Impacts			Mitigation Measures
Proposed Action	Alternative 1	No Action Alternative	
Transportation			
<ul style="list-style-type: none"> Increased traffic, detours and delays on Kootenai River Road, state roads and U.S. Highway 2 from movement and use of heavy construction vehicles and equipment during construction. Short-term increases in construction related noise and decreased air quality during construction. Potential for increased unauthorized access during and following project construction. 	<ul style="list-style-type: none"> Impacts from Alternative 1 would be similar to those under the Proposed Action. 	<ul style="list-style-type: none"> Emergency or normal maintenance of the line could result in detours and traffic delays. 	<ul style="list-style-type: none"> Coordinate routing and scheduling of construction traffic with state and county road staff. Employ traffic control flaggers and post warning signs of construction activity and merging traffic when necessary. Repair damage to roads caused by the project. Install gates on access roads when requested by property owners to reduce unauthorized use. Spray and seed access roads to reduce erosion and control noxious weeds. Protect cultural resources in the Kootenai River area by using borrowed fill material for road building instead of cut and fill practices. Install marker balls on the Quartz Creek realignment if the decision is made to construct that realignment.
Air Quality			
<ul style="list-style-type: none"> Combustion pollutants from equipment exhaust and fugitive dust particles from disturbed soils becoming airborne. The maximum annual PM-10 emissions during construction of the Proposed Action would be 4.5 tons (Clean Air Act regulations require that less than 70 tons per year be generated within the PM-10 non-attainment area). The maximum PM-2.5 emissions during construction of the Proposed Action would be about 2.9 tons/year (Clean Air Act regulations require that less than 7 tons per year be generated within the PM-2.5 non-attainment area). 	<ul style="list-style-type: none"> Similar to the Proposed Action, combustion pollutants from equipment exhaust and fugitive dust particles from disturbed soils under Alternative 1 would become airborne. The maximum annual PM-10 emissions during construction of Alternative 1 would be 5.6 tons (Clean Air Act regulations require that less than 70 tons per year be generated within the PM-10 non-attainment area). The maximum PM-2.5 emissions during construction of Alternative 1 would be about 3.6 tons/year (Clean Air Act regulations require that less than 7 tons per year be generated within the PM-2.5 non-attainment area). 	<ul style="list-style-type: none"> Pollutants from fire resulting from conductor failure could increase air pollution. 	<ul style="list-style-type: none"> Use water trucks to control dust during construction operations. Ensure construction vehicles travel at low speeds on gravel roads and at the construction sites to minimize dust. Comply with Montana State tailpipe emission standards for all on-road vehicles. Use low sulfur fuel for all on-road diesel vehicles. Ensure all vehicle engines are in good operating condition to minimize exhaust emissions. Lop, chip, and scatter wood debris on site to decay. No burning of wood debris will occur as a result of the proposed activities. Replant where needed, as soon as reasonably possible following construction activities. Use of vehicles will be limited if data collected at Montana's DEQ Libby Air Quality Monitoring Site indicates that the air quality is in the "Unhealthy" health effect category. Vehicle miles traveled will be limited on unpaved roads to the extent possible and consultation with the Montana DEQ Air Program staff will occur.

Table S-2. Summary of Impacts of the Pipe Creek Realignment, the Quartz Creek Realignment, and the Kootenai River Crossing Realignment

Potential Impacts		
Pipe Creek Realignment (115 and 230 kV)	Quartz Creek Realignment (115 and 230 kV)	Kootenai River Crossing Realignment (115 and 230 kV)
Soils, Geology and Water Resources		
<ul style="list-style-type: none"> • Clearing of new right-of-way and construction of new roads would disturb about 3.2 acres of soils. Slightly more soil would be disturbed under the 230-kV voltage because of the wider right-of-way. • Clearing within the riparian zones of Pipe and Bobtail creeks would potentially increase sediment delivery to those streams. 	<ul style="list-style-type: none"> • New right-of-way clearing and structures sites for the Quartz Creek realignment would disturb about 23 acres of soils. Slightly more soil would be disturbed under the 230-kV voltage because of the wider right-of-way. • Approximately 4.7 acres of soils would be disturbed from new road construction and road improvement. 	<ul style="list-style-type: none"> • Approximately 1 acre of soils would be disturbed from new road construction and road improvement.
Land Use		
<ul style="list-style-type: none"> • Ownership on Kootenai National Forest land would increase from 2 acres on the existing corridor to 7.4 acres (at 115 kV) or 9.2 acres (at 230 kV) on the new corridor; the new alignment would be removed from Lincoln County land along Kootenai River Road and private ownership would decrease from 4 acres on the existing corridor to 0.6 acres (at 115 kV) or 0.7 acres (at 230 kV) on the new corridor. • Land use would permanently change on Kootenai Forest land from bald eagle habitat and old growth to transmission line. • Conductor and one new structure would be visible from the private land crossed by the new realignment where no views of the line currently exist. • Full use of the existing corridor would not be restored to landowners because the electrical distribution line that is currently attached to the existing transmission line along Kootenai River Road would remain. 	<ul style="list-style-type: none"> • This realignment would move the existing transmission line located on private land in the Bighorn Terrace residential area (between structures 19/4 and 21/5) north to other private land and Kootenai National Forest land. Ownership on Kootenai National Forest land would increase from 3 acres on the existing corridor to 26 acres (at 115 kV) or 32 acres (at 230 kV) on the new corridor. The new alignment would be removed from Lincoln County land north of Bighorn Terrace and private ownership would decrease from 17 acres on the existing corridor to 1.8 acres (at 115 kV) or 2.2 acres (at 230 kV) on the new corridor. • Land use would permanently change from grizzly bear habitat and old growth to transmission line on portions of Kootenai National Forest land. 	<ul style="list-style-type: none"> • Ownership on Kootenai National Forest land would decrease from 7 acres on the existing corridor to 6 acres (at 115 kV) or 7 acres (at 230 kV) on the new corridor. Ownership by Lincoln County would increase from 1.6 acres on the existing corridor to 3 acres (at 115 kV) or 3.5 acres (at 230 kV) on the new corridor. • Construction, operation and maintenance activities for the rebuilt transmission line would move about 1.3 miles east from Kootenai Falls and to the eastern edge of the Kootenai Falls Cultural Resource District. • Placement of about 2 acres (for the 115 kV) and 2.5 acres (for the 230 kV) of the transmission line within the Cabinet Face East Inventoried Road Area would occur. About 5 new structures with spur roads off Highway 2 would be constructed in this area. • About 4,000 feet of corridor currently within the Grizzly Bear Management Unit (BMU) 10 would be moved to BMU 1 located on the south side of the Kootenai River.

Potential Impacts		
Pipe Creek Realignment (115 and 230 kV)	Quartz Creek Realignment (115 and 230 kV)	Kootenai River Crossing Realignment (115 and 230 kV)
Vegetation		
<ul style="list-style-type: none"> About 1.5 acres (at 115 kV) and 1.8 acres (at 230 kV) would be cleared within the 170-acre designated old growth stand located near Bobtail Creek. About 38.9 acres of designated and undesignated old growth buffer area would be affected regardless of voltage from danger tree clearing. Construction and maintenance activities would increase the spread of noxious weeds within the realignment area. Currently only about 1% of the realignment is infested with weeds. The existing corridor between structures 17/14 and 18/10 where the distribution line would remain would continue to be a vector for weed spread unless the right-of-way and associated access roads were sprayed for weeds and re-vegetated. 	<ul style="list-style-type: none"> About 2.0 acres (at 115 kV) and 2.5 acres (at 230 kV) of the 35 acre designated old growth stand northwest of the Bighorn Terrace subdivision would be cleared for this realignment. About 30.9 acres of designated and undesignated buffer habitat would be impacted by danger tree clearing regardless of voltage. Construction and maintenance activities would increase the spread of noxious weeds within the realignment area. Currently only about 22% of the realignment is infested with weeds. The existing corridor between structures 19/4 and 21/4 would continue to be a significant vector for weed spread after removal of the line in this area unless the right-of-way and associated access roads were sprayed for weeds and re-vegetated. 	<ul style="list-style-type: none"> Construction and maintenance activities would increase the spread of noxious weeds within the realignment area. The existing corridor between structures 25/2 and 25/10 would continue to be a significant vector for weed spread unless the right-of-way and associated access roads were sprayed for weeds and re-vegetated. Currently only about 80% of the realignment is infested with weeds.
Floodplains and Wetlands		
<ul style="list-style-type: none"> Riparian wetlands would be cleared for new right-of-way along Pipe and Bobtail creeks. 	<ul style="list-style-type: none"> There is the potential that some tall growing vegetation in the Quartz Creek riparian wetlands within the new right-of-way would be removed if the “sock-line and “hard- line” used to string the conductor sag low enough to hit trees. 	<ul style="list-style-type: none"> Tall growing vegetation within Kootenai River riparian wetlands would be cleared. Clearing would be greater for the 230-kV voltage. One new structure would be constructed about 100 feet from the southern bank of the Kootenai River, within the 1,200-foot-wide floodplain.
Wildlife		
<ul style="list-style-type: none"> Common Wildlife Species <ul style="list-style-type: none"> Impacts to common wildlife species from this realignment would be similar to those under the Proposed Action and Alternative 1. Clearing of new right-of-way would impact migratory bird nesting, foraging, and roosting habitat because suitable habitat for those activities would be removed with this realignment. Potential for line collision would increase if taller 230-kV structures with conductor placed in a stacked configuration were placed in new right-of- 	<ul style="list-style-type: none"> Common Wildlife Species <ul style="list-style-type: none"> Impacts to common wildlife species from this realignment would be similar to those under the Proposed Action and Alternative 1. Clearing of new right-of-way would decrease migratory bird nesting, foraging, and roosting habitat because suitable habitat for those activities would be removed with this realignment. Potential for line collision would increase slightly if taller 230-kV structures with conductor placed in a stacked configuration were placed in new right-of-way 	<ul style="list-style-type: none"> Common Wildlife Species <ul style="list-style-type: none"> Impacts to common wildlife species from this realignment would be similar to those under the Proposed Action and Alternative 1. Potential for line collision would increase where the right-of-way would cross the Kootenai River in a new location unfamiliar to birds. Construction of the realignment at 230 kV with conductor placed in a stacked configuration also would increase the risk of collision.

Potential Impacts		
Pipe Creek Realignment (115 and 230 kV)	Quartz Creek Realignment (115 and 230 kV)	Kootenai River Crossing Realignment (115 and 230 kV)
<p>way.</p> <ul style="list-style-type: none"> • Gray wolf: Effects would be minimal. • Grizzly bear: No impact • Bald eagle <ul style="list-style-type: none"> ➢ Inside Management Zones I and II of the Pipe Creek nest: About 6.9 acres (115 kV) and 8.7 acres (230 kV) of mature forest habitat would be cleared within Zones I and II. About 6.8 acres (115 kV) to 5.4 acres (230 kV) of edge affected area would be impacted within Zones I and II. Suitable nesting, perching, and roosting trees would be removed within this edge affected area. This realignment would cross the primary flight corridor between the Pipe Creek nest tree and the Kootenai River increasing the potential for eagles to collide with the conductors. The risk would increase further if 230-kV structures are constructed and multiple wires are present within the flight paths of the nesting eagles. ➢ Outside Management Zones I and II of the Pipe Creek nest: About 1.4 acres (at 115 kV) and 2.8 acres (at 230 kV) of canopy and edge affected area would be impacted in Zone III of the Pipe Creek nest site from right-of-way clearing. Additionally, clearing of about 1.5 acres (at 115 kV) and 1.8 acres (at 230 kV) of designated old growth would occur in the old growth stand near Bobtail Creek from this realignment. ➢ Right-of-way clearing for this realignment also would remove foraging habitat from Zone III of the Quartz Creek bald eagle nest, as well as general foraging and wintering habitat for the Hunter Gulch and Kootenai Falls nests. • Peregrine falcon: No impact • Pileated woodpecker: About 1.5 acres (at 115 kV) and 1.8 acres (at 230 kV) within the 170-acre designated old growth stand located near Bobtail Creek would be 	<p>above Quartz Creek.</p> <ul style="list-style-type: none"> • Gray wolf: Effects would be minimal. • Grizzly bear: <ul style="list-style-type: none"> ➢ Bear Management Unit 10: Potential impacts to grizzly bear would occur during construction because of the two to three weeks of helicopter use and its impact on habitat effectiveness, and the addition of new access roads and their effect on linear Open Road Density (ORD) and Open Motorized Route Density (OMRD). This realignment option would add 550 acres (0.8 square miles) to the helicopter influence zone and would require construction and re-opening of 1.3 miles of new road. After construction is complete, potential impacts to grizzly bear would decrease. ➢ Bear Management Unit 1: Potential impacts to grizzly bear would occur during construction because of the two to three weeks of helicopter use and its impact on habitat effectiveness, and the addition of new access roads and their effect on linear ORD and OMRD. This realignment would add 55 acres (0.1 square miles) to the helicopter zone decreasing habitat effectiveness inside BMU 1 during construction. After construction is complete, potential impacts to grizzly bear would decrease. ➢ Bear Outside Recovery Zones: Effects on the West Kootenai and Troy BORZ polygons from this realignment option would be similar to those under the Proposed Action and Alternative 1. • Bald eagle • Inside Management Zones I and II of the Quartz Creek nest: About 7.7 acres (at 115 kV) and 9.6 acres (at 230 kV) of mature forest habitat would be cleared within Zones I and II. Within those acreages, 2.0 acres (at 115 kV) and 2.5 acres (at 230 kV) would be cleared within the old growth stand northwest of Bighorn Terrace. Additionally, approximately 6.5 acres 	<ul style="list-style-type: none"> • Gray wolf: Effects would be minimal. • Grizzly bear: <ul style="list-style-type: none"> ➢ Bear Management Unit 10: Effects would be minimal. ➢ Bear Management Unit 1: Potential impacts to grizzly bear would occur during construction because of the two to three weeks of helicopter use and its impact on habitat effectiveness, and the addition of new access roads and their effect on linear ORD and OMRD. This realignment option would require construction of 0.2 miles of new road slightly affecting linear ORD, OMRD, and TMRD. After construction is complete, potential impacts to grizzly bear would decrease. ➢ Bear Outside Recovery Zones: No impact • Bald eagle <ul style="list-style-type: none"> ➢ Inside Management Zones I and II of the Kootenai Falls nest: About 3.7 acres (at 115 kV) and 4.6 acres (at 230 kV) of forest habitat would be cleared within Zones I and II of the Kootenai Falls nest. Additionally, about 1.0 acres (115 kV) to 0.7 acres (230 kV) of edge affected area would be impacted within Zones I and II. ➢ Outside Management Zones I and II of the Quartz Creek nest: About 5.6 acres (at 115 kV) and 6.4 acres (at 230 kV) of canopy and edge affected area would be impacted in Zone III of the Kootenai Falls nest site. Right-of-way clearing for this realignment also would remove foraging habitat from Zone III of the Kootenai Falls nest, as well as general foraging and wintering habitat for the Pipe Creek, Quartz Creek, and Hunter Gulch bald eagle nests. • Peregrine falcon: No impact • Pileated woodpecker: About 3 trees preferred by pileated woodpecker would be removed regardless of

Potential Impacts		
Pipe Creek Realignment (115 and 230 kV)	Quartz Creek Realignment (115 and 230 kV)	Kootenai River Crossing Realignment (115 and 230 kV)
<p>cleared. About 3.5 acres (at 115 kV) and 4.3 acres (at 230 kV) would be cleared in undesignated old growth located along the realignment. About 38.9 acres at both voltages of old growth buffer zone would be impacted by danger tree clearing or thinning. About 34 trees preferred by pileated woodpecker (species include ponderosa pine, western larch, cottonwood, and aspen) and 10 snags would be removed regardless of voltage.</p> <ul style="list-style-type: none"> • Northern goshawk: Approximately 96 suitable goshawk nesting trees would be removed for the Pipe Creek realignment within the Pipestone PSU regardless of voltage. About 12.7 acres (at 115 kV) and 15.7 acres (at 230 kV) of foraging and nesting habitat would be removed. • Flammulated owl: Approximately 12 suitable flammulated owl nesting trees would be removed for the Pipe Creek realignment within the Pipestone PSU regardless of voltage. About 12.7 acres (at 115 kV) and 15.7 acres (at 230 kV) of foraging and nesting habitat would be removed. • Harlequin duck: No impact • Elk and White-tailed deer: Effects would similar to those under the Proposed Action and Alternative 1. • Bighorn sheep: No impact 	<p>(115 kV) to 5.1 acres (230 kV) of edge affected area would be impacted within Zones I and II from danger tree removal.</p> <ul style="list-style-type: none"> • Outside Management Zones I and II of the Quartz Creek nest: About 36.4 acres (at 115 kV) and 42.3 acres (at 230 kV) of canopy and edge affected area would be impacted in Zone III. Right-of-way clearing for this realignment also would remove foraging habitat from Zone III of the Pipe Creek and Hunter Gulch bald eagle nests, as well as general foraging and wintering habitat for the Kootenai Falls nest. • Peregrine falcon: No impact • Pileated woodpecker: About 2.0 acres (at 115 kV) and 2.5 acres (at 230 kV) of the 35-acre designated old growth stand located northwest of Bighorn Terrace would be cleared. About 30.9 acres regardless voltages of old growth buffer zone would be impacted by danger tree clearing. About 142 trees preferred by pileated woodpecker and 6 snags regardless of voltage would be removed. • Northern goshawk: About 326 suitable goshawk nesting trees would be removed for this realignment within the Quartz and Sheep PSUs depending on voltage. About 31.7 acres (at 115 kV) and 39.1 acres (at 230 kV) of foraging and nesting habitat would be removed. • Flammulated owl: About 21 suitable flammulated owl nesting trees would be removed within the Quartz and Sheep PSUs depending on voltage. About 31.7 acres (at 115 kV) and 39.1 acres (at 230 kV) of foraging and nesting habitat would be removed. • Harlequin duck: Effects would be minimal • Elk and White-tailed deer: Effects would similar to those under the Proposed Action and Alternative 1. 	<p>voltage.</p> <ul style="list-style-type: none"> • Northern goshawk: Approximately 15 suitable goshawk nesting trees would be removed • Flammulated owl: No impact • Harlequin duck: Impacts could occur from clearing of riparian vegetation along the Kootenai River. • Elk and White-tailed deer: Effects would similar to those under the Proposed Action and Alternative 1. • Bighorn sheep: About 0.3 acres (at 115 kV) and 0.4 acres (at 230 kV) would be cleared near the northern crossing structure within the Sheep PSU.

Potential Impacts		
Pipe Creek Realignment (115 and 230 kV)	Quartz Creek Realignment (115 and 230 kV)	Kootenai River Crossing Realignment (115 and 230 kV)
	<ul style="list-style-type: none"> Bighorn sheep: About 10.6 acres (at 115 kV) and 13.2 acres (at 230 kV) of canopy would be removed in the Sheep PSU. 	
Fish, Amphibians and Reptiles		
<ul style="list-style-type: none"> About 2.8 acres (1.4 acres in Pipe Creek and 1.4 acres in Bobtail Creek) of riparian vegetation would be removed at 230-kV. Removal of large trees in the RHCAs could impact fish if sediment generated during removal enters the streams. 	<ul style="list-style-type: none"> No impact 	<ul style="list-style-type: none"> About 0.8 acres of riparian vegetation (at 230 kV) would be cleared on both sides of the Kootenai River. Less clearing would occur at the 115-kV voltage. Coeur d’Alene salamanders could be displaced from their habitat or killed where the new corridor would run parallel to Highway 2.
Visual Resources		
<ul style="list-style-type: none"> About 300 feet of new right-of-way would be visible from Kootenai River Road east of the Pipe Creek area regardless of voltage. Adjacent to Pipe Creek, new structures and conductor would be visible where none currently exist. Where the realignment would cross Pipe Creek on Kootenai National Forest land, the “Modification” VQO would not be met because the new structures and right-of-way would dominate the landscape in this area. Where the realignment would cross Bobtail Creek Forest land, the “Partial Retention” VQO would not be met because the new structures and cleared right-of-way would most likely result in modification or maximum modification of the landscape. 	<ul style="list-style-type: none"> New right-of-way and structures would be visible across the Kootenai River on the west slope north of the Bighorn Terrace area. Conductors crossing the Quartz Creek drainage would be visible from Highway 2 although the viewing duration would be brief. Construction of the Quartz Creek realignment would mean that the VQO of “Partial Retention” would not be met under either voltage option. New structures and cleared right-of-way would most likely result in maximum modification at viewpoints 5 and 6. 	<ul style="list-style-type: none"> Steel structures and conductor would be visible adjacent to the south side of Highway 2. This realignment would move the Kootenai River transmission line crossing about 3/4 mile east of the existing crossing and out of the view shed of the Kootenai Falls recreation area, a positive affect. Removal of the line on the north side of the Kootenai River would improve the visual quality in an area where the VQO is “Retention.” Construction of the Kootenai River realignment would create a situation in which the VQO of “Partial Retention” would not be met in the area of the realignment, because the transmission line would dominate the landscape along Highway 2, resulting in maximum modification at Viewpoint 7 regardless of voltage option.
Cultural Resources		

Potential Impacts		
Pipe Creek Realignment (115 and 230 kV)	Quartz Creek Realignment (115 and 230 kV)	Kootenai River Crossing Realignment (115 and 230 kV)
<ul style="list-style-type: none"> • Impacts would be minimal 	<ul style="list-style-type: none"> • Impacts would be minimal 	<ul style="list-style-type: none"> • Portions of the historic Highway 2 and the BNSF railroad located in the vicinity of this realignment would potentially be impacted during construction. • A newly recorded prehistoric site located on the north side of the Kootenai River would be disturbed permanently. Access road work, tensioning site preparation and structure installation would disturb soil and potentially subsurface deposits in this area. • If this realignment were constructed, the river crossing would still be within the Kootenai Falls Cultural Resource District, but impacts to traditional CSKT and other Kootenai tribes' uses of the Kootenai Falls area as a spiritual site would be reduced.
Recreation Resources		
<ul style="list-style-type: none"> • Unauthorized use of new roads would occur. 	<ul style="list-style-type: none"> • Unauthorized use of new roads would occur. 	<ul style="list-style-type: none"> • Removal of the transmission line from the China Creek area on the north side of the Kootenai River would allow natural revegetation providing more enjoyable recreational opportunities to hikers or bicyclists.
Noise, Public Health and Safety		
<ul style="list-style-type: none"> • Impacts would be similar to those under the Proposed Action and Alternative 1. 	<ul style="list-style-type: none"> • Impacts would be similar to those under the Proposed Action and Alternative 1. 	<ul style="list-style-type: none"> • Impacts would be similar to those under the Proposed Action and Alternative 1.
Social and Economic Resources		
<ul style="list-style-type: none"> • Impacts would be similar to those under the Proposed Action and Alternative 1. 	<ul style="list-style-type: none"> • Impacts would be similar to those under the Proposed Action and Alternative 1. 	<ul style="list-style-type: none"> • Impacts would be similar to those under the Proposed Action and Alternative 1.
Transportation		
<ul style="list-style-type: none"> • Increased traffic, detours and delays on Kootenai River Road and Bobtail Road during construction. 	<ul style="list-style-type: none"> • Increased traffic, detours and delays on Kootenai River Road east of Quartz Creek during construction. <p>This realignment would affect small planes or helicopters from the permanent change in location and height of the conductor.</p>	<ul style="list-style-type: none"> • This realignment would cause traffic delays as conductor is strung across the highway and railroad during construction.

Potential Impacts		
Pipe Creek Realignment (115 and 230 kV)	Quartz Creek Realignment (115 and 230 kV)	Kootenai River Crossing Realignment (115 and 230 kV)
Air Quality		
<ul style="list-style-type: none"> About 0.6 tons/year of PM-2.5 at 115 kV and 0.7 tons/year of PM-2.5 at 230 kV would be generated from construction of this realignment within the non-attainment area for PM-2.5. 	<ul style="list-style-type: none"> About 1.3 tons/year of PM-2.5 at 115 kV and 1.5 tons/year of PM-2.5 at 230 kV would be generated from construction of this realignment within the non-attainment area for PM-2.5. 	<ul style="list-style-type: none"> No impact