

3.10 GENERAL WILDLIFE AND FISH

This section describes the potential impacts from the Preferred Route, Proposed Route, and Route Alternatives on the terrestrial and aquatic environments during construction, operations, and decommissioning. The Preferred Route, Proposed Route, and Alternatives would pass through multiple habitat types currently utilized by wildlife species (Appendix E, Figures E.10-1 through E.10-6). Any activities that adversely affect habitat (terrestrial or aquatic) can impact the survival and reproductive success of wildlife.

The BLM's Preferred Routes for each segment of the Project are listed below. Where applicable, the preferred route identified by another federal agency or a county or state government is also noted.

- **Segment 1W:** The BLM's Preferred Route is the Proposed Route (Figure A-2). This route is also the State of Wyoming's preferred route.
- **Segment 2:** The BLM's Preferred Route is the Proposed Route (Figure A-3). This route is also the State of Wyoming's preferred route.
- **Segment 3:** The BLM's Preferred Route is the Proposed Route, including 3A (Figure A-4). This route is also the State of Wyoming's preferred route.
- **Segment 4:** The BLM's Preferred Route is the Proposed Route (Figures A-5 and A-6) except within the Caribou-Targhee NF. The portion of this route in Wyoming is also the State of Wyoming's preferred route. The Forest Service's preferred route is the Proposed Route within the NF incorporating Alternative 4G (Figure A-6).
- **Segment 5:** The BLM's Preferred Route is the Proposed Route incorporating Alternatives 5B and 5E, assuming that WECC reliability issues associated with 5E are resolved (Figure A-7). Power County's preferred route is the Proposed Route incorporating Alternatives 5C and 5E (Figure A-7).
- **Segment 6:** The BLM's Preferred Route is the proposal to upgrade the line voltage from 345 kV to 500 kV (Figure A-8).
- **Segment 7:** The BLM's Preferred Route is the Proposed Route incorporating Alternatives 7B, 7C, 7D, and 7G (Figure A-9). The Proposed Route in the East Hills and Alternative 7G will be microsited to avoid sage-grouse PPH. Power and Cassia Counties' preferred route is Alternative 7K (Figure A-9).
- **Segment 8:** The BLM's Preferred Route is the Proposed Route incorporating Alternative 8B (Figure A-10). This is also IDANG's preferred route.
- **Segment 9:** The BLM's Preferred Route is the Proposed Route incorporating Alternative 9E, which was revised to avoid PPH and the community of Murphy (Figure A-11). Owyhee County's preferred route is Alternative 9D (Figure A-11).
- **Segment 10:** The BLM's Preferred Route is the Proposed Route (Figure A-12).

3.10.1 Affected Environment

This section analyzes the potential impacts the Project's activities could have on wildlife and fish species and their habitats in general, including common, invasive, and non-

special status species found in the Analysis Area. Species listed as threatened or endangered, or that are candidates for listing or proposed for listing, under the federal ESA¹, and those species listed by the BLM or Forest Service as sensitive or are Forest Service Management Indicator Species (MIS) are addressed individually in Section 3.11 – Special Status Wildlife and Fish Species. Further discussion of the habitat types referred to in this section can be found in Section 3.6 – Vegetation Communities.

This section starts with a discussion of the Analysis Area, identifies the issues that have driven the analysis, and characterizes the existing conditions across the Proposed Route and Route Alternatives in Wyoming, Idaho, and the small area of northeastern Utah that would be indirectly affected (but not crossed) by Alternative 4B/4D.

3.10.1.1 Analysis Area

As explained in Section 3.6 – Vegetation Communities, a remote sensing approach (1,000 feet on each side of the centerline and access roads was mapped), in conjunction with field surveys and existing information, was used to characterize the affected environment and to analyze impacts from the Project. The BLM and Forest Service determined that a broad Analysis Area would be needed for remote sensing imagery, which could cover the Proposed Route, Route Alternatives, and their immediate area, because analysis of existing conditions and impacts was occurring at the same time that the Proposed Route and Route Alternative were being chosen and refined. This broad Analysis Area would allow for minor route alterations to occur without resulting in altered routes entering areas that lacked data from remote sensing. In addition, the Analysis Area covers both public (federal and state) and privately held lands, allowing for an early evaluation of all lands that could be impacted, regardless of ownership. The Analysis Area was augmented several times during the spring, summer, and fall of 2008 as changes were made to the Proposed Route and Route Alternatives, and as new Route Alternatives were added in response to issues raised during scoping, agency meetings, and landowner meetings.

The Analysis Area runs generally east-west across the Intermountain West, primarily through sagebrush-dominated shrublands, most of which have been disturbed or altered. Following shrublands, the other habitat types encountered by the Proposed Route (in descending order) are: grasslands, agriculture or otherwise disturbed areas, forest and woodland, wetlands and riparian areas, and other habitat types (developed lands and other undefined habitat types).

The Analysis Area, for the purposes of terrestrial wildlife habitat, was set as a 1-mile-wide area centered on the Proposed Route, the Route Alternatives, and access roads (0.5 mile on either side of the centerline of each route or road), and a 0.5-mile buffer around all fly yards, laydown yards, multipurpose yards, and wire-pulling/splicing sites (see Section 3.1 – Introduction). This distance was chosen so that indirect effects to wildlife would be captured. While ground clearing for transmission towers, equipment yards, and where tall vegetation exists would take up only a small percentage of the Analysis Area (approximately 19,293 acres of the 12,042,700-acre Analysis Area cleared

¹ P.L. 93-205, December 28, 1973, 81 Stat. 884, as amended, known as the Endangered Species Act of 1973 (16 U.S.C. 35 §§1531-1544).

during construction, or 0.2 percent), it is necessary to utilize an Analysis Area that extends beyond the limits of direct impacts in order to capture the areas that may experience indirect impacts. Direct impacts to habitat and to species living in the immediate area of construction would occur at the actual footprint of disturbance during construction, which includes the clearing of vegetation and other activities at construction areas for each transmission structure, access roads, laydown yards, fly yards, and wire-pulling/splicing areas. Indirect impacts would extend beyond the location of construction and operations activities and include noise and edge effects (see Construction under Section 3.10.2.2 for a discussion of edge effects). Construction- and operations-related noise, including from helicopters, is the indirect effect expected to reach the longest distance from the ROW. This noise is expected to attenuate below the criteria levels in less than 0.5 mile (see Section 3.23 – Noise), so would be contained in the Analysis Area. This buffer would also include edge effects caused by vegetation removal (see discussions of edge effects in Section 3.10.2.2). Therefore, the Analysis Area would encompass most indirect effects to wildlife.

Some species could experience indirect impacts outside this buffer due to their sensitivity to disturbance, such as big game, raptors, and sage- and sharp-tailed grouse. Grouse are addressed in Section 3.11 – Special Status Wildlife and Fish Species. The Analysis Area was expanded to include additional indirect impacts to raptors and big game. One-mile buffers around raptor nests were included in the Analysis Area in their entirety if any of these 1-mile raptor buffers overlapped with the 0.5-mile buffer around the centerline of the Proposed Route, Route Alternatives, or other Project features. In addition, mapped areas of big game winter range² and parturition areas (where ungulate species give birth and hide their young) as defined by state and federal agencies were included in the Analysis Area. If the centerline of the Proposed Route, Route Alternatives, or other Project features crossed through any portion of designated big game winter range or parturition areas, the entire mapped area was included in the Analysis Area. Table 3.10-1 summarizes the Analysis Area extensions.

Table 3.10-1. Extended Analysis Areas for General Wildlife (species discussed in Section 3.10.1.5)

| Species | Area | Justification |
|----------|--|---|
| Raptors | One-mile buffer around known nest locations (active or historical) | On public lands, certain activities are restricted seasonally to protect breeding raptors. Timing and buffer restrictions are generally limited to active nests (i.e., those being used by a pair for breeding in a given year). |
| Big Game | Mapped Winter Range | On public lands, certain activities are restricted seasonally to protect large ungulates while on winter range. Restrictions are limited to areas of known concentrations of ungulates during times determined by wildlife management agency when ungulates will likely be present. |
| | Parturition Areas | On public lands, certain activities are restricted seasonally to protect large ungulates when the females are giving birth, usually a short period in the spring. Restrictions are limited to areas of known birthing areas during times determined by wildlife management agency when female ungulates will likely be present. |

² Winter range is defined as the portion of the winter range to which a wildlife species is confined during periods of heaviest snow cover (DOE and BLM 2008).

A fragmentation analysis was conducted to identify the amount of habitat fragmentation that this Project may cause. Fragment sizes were assessed in the area surrounding the Proposed Route and Route Alternatives. The areas of contiguous habitat patches of at least 0.5 acre surrounding the Analysis Area were measured, and their average size calculated, and it was found that the average width of existing contiguous habitat patch sizes is roughly 4 miles. Therefore, the fragmentation analysis was carried out to 4 miles on either side of the Proposed Route and Route Alternatives, or other Project features. This distance was chosen in order to assess a large enough area to capture the currently existing level of fragmentation, without assessing too large of an area, which would mask the effects of the Project's contribution to the area's fragmentation. Habitat beyond this distance was not considered in the analysis. The general habitat/vegetation types were based on Gap Analysis Program (GAP) analysis data, as Project-specific remote sensing and field survey data were not available for the entire 4-mile distance. The fragmentation analysis took into account roads and transmission lines both jointly and separately. Habitat fragmentation is discussed on a segment-by-segment basis in Section 3.10.2.3.

The Analysis Area for fish resources is a 1-mile-wide corridor, 0.5 mile from either side of the transmission center line along the Proposed Route and Route Alternatives, or other Project features. In addition, the Analysis Area includes a 500-foot-wide corridor on each side of the centerline of any improved or new access roads outside of the 1-mile corridor. It includes the stream segments crossed by the Proposed Route and its Alternatives, riparian areas within the ROW, areas adjacent to these streams, and the water reaches and fish resources downstream of these crossings that could be affected by actions that occur at these crossings. It also includes other Project-related construction areas that could affect riparian habitat and runoff of materials (e.g., sediment, nutrients, toxicants, petroleum products) into both perennial and ephemeral streams.

3.10.1.2 Issues Related to General Wildlife and Fish

The following wildlife-related issues were brought up by the public during public scoping (Tetra Tech 2009) and comments on the Draft EIS, were raised by federal and state agencies during scoping and agency discussions, or are issues that must be considered as stipulated in law or regulation.

- What the effects of Project construction and operations would be on general, non-special-status wildlife, including birds, reptiles and amphibians, and large and small mammals;
- When routing the Project, whether key wildlife habitats would be avoided;
- What the effects would be on migratory bird species;
- Whether there would be a loss or fragmentation of wildlife habitat, especially for sagebrush-obligate and forest-dependent species;
- What wildlife mortality would occur during construction;
- Whether there would be a potential for disruption of breeding and reproductive activities of raptors;

- What the effects would be on big game migration;
- What the effects would be on big game and crucial big game winter range—habitat removal and disturbance during seasonal occupancy;
- What the effects would be on big game parturition areas from habitat removal and disturbance during seasonal occupancy;
- What the potential would be for avian collision during operations and what measures would be taken to minimize this risk;
- Whether noise created during transmission line operations would affect wildlife;
- What best management practices would be used during construction and operations to protect fish resources;
- How disturbed instream habitats would be protected and restored;
- What the potential would be for electrocution of large birds during operations; and
- What the impacts would be on wildlife or wildlife habitat within an NWR, State Park, State Wildlife Management Area, SMA, or other NLCS land on federal lands specifically managed for one or more species of wildlife?

3.10.1.3 Regulatory Framework

There are multiple federal and state regulations and planning and guidance documents that address protection of big game, raptors, and migratory birds. These include the ESA, the Bald and Golden Eagle Protection Act (Eagle Act), the Migratory Bird Treaty Act (MBTA), the Snake River Birds of Prey National Conservation Area Act (SRBOP Act, P.L. 103-64), state Wildlife Conservation Strategies, species-specific Conservation Plans, and various BLM and Forest Service land management plans. Those regulations that only apply to special status species are discussed further in Section 3.11 – Special Status Wildlife and Fish Species.

Federal Regulations

The MBTA³ was enacted in 1918 in order to put an end to the commercial trade of migratory birds and their feathers. This Act decrees that all migratory birds and their parts (including eggs, nests, and feathers) are fully protected (USFWS 2002a). Under this Act, it is unlawful to pursue, hunt, take, capture, kill, possess, offer to or sell, barter, purchase, deliver, transport, or receive any migratory birds (including parts, nests, eggs or other product, manufactured or not). As there is no permitting scheme for the incidental take of migratory birds during otherwise lawful activities, developments must attempt to minimize potential impacts to avian species. EO 13186 (January 10, 2001; Responsibilities of Federal Agencies to Protect Migratory Birds) also directs federal agencies to, among other things, ensure that environmental analyses of federal actions required by the NEPA or other established environmental review processes evaluate the effects of actions and agency plans on migratory birds, with emphasis on species of concern. This includes developing and implementing a Memorandum of Understanding (MOU) with the USFWS promoting the conservation of migratory bird populations. In order to guide conformance to the MBTA, the BLM has drafted interim management

³ 16 U.S.C. §§ 703-712, July 3, 1918, as amended 1936, 1960, 1969, 1974, 1978, 1986, and 1989.

guidance (BLM 2007c). This instruction memorandum outlines analyses that should be carried out in order to assess impacts to migratory birds, particularly Species of Conservation Concern and Game Birds Below Desired Condition. An MOU between the BLM and USFWS has also been released that describes a collaborative approach to conserving bird populations; the BLM's responsibilities under this MOU include integrating migratory bird conservation measures (as applicable) into future Activity Management Planning, developing surface operating standards and guidelines for oil and gas exploration and development, and renewable (wind, solar, and geothermal) energy development NEPA mitigation (BLM and USFWS 2010). The Forest Service has also developed an MOU with USFWS to promote the conservation of migratory birds (Forest Service and USFWS 2008).

The Eagle Act prohibits take, possession, selling, purchasing, bartering, or transporting of live or dead bald or golden eagles, or any parts, nests, or eggs of these birds. Under the Eagle Act, "take" includes pursuing, shooting, poisoning, wounding, killing, capturing, molesting, and disturbing. "Disturb" means "to agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle; 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior; or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior." The USFWS has developed the National Bald Eagle Management Guidelines, which present general recommendations for activities that take place near bald eagle roosts and nests. These guidelines are not law, but are meant to help landowners and agencies avoid violating the Eagle Act, under which agencies, companies, and individuals can be prosecuted. On September 11, 2009, the USFWS published new guidelines and regulations specifying the conditions under which incidental take permits could be authorized under the Eagle Act (*74 Federal Register 46836*). The USFWS has since released documents providing draft guidance for external partners on how to avoid violating the Eagle Act, including a document specifically for golden eagles (Pagel et al. 2010; USFWS 2010a, 2011a). The BLM has also issued direction on complying with the Eagle Act (BLM 2010d). These documents describe suggestions for consultation with agencies, what analyses to conduct and include in documents, and survey protocols. In addition, the USFWS released a Biological Opinion (USFWS 2004a) in response to activities proposed in various BLM RMPs in Wyoming that describes various activities, mitigation guidelines, and measures meant to protect bald eagles, pursuant to Section 7 of the ESA (BLM 2003b). Although the bald eagle was delisted in 2007, the BLM is committed to using conservation measures in the Biological Opinion in Wyoming to prevent the re-listing of this species through their 6840 Manual – Special Status Species Management.

The SRBOP Act mandates that the SRBOP (which is relevant to Segments 8 and 9) be managed by the BLM to provide for the conservation, protection, and enhancement of raptor populations and habitats and the natural and environmental resources and values associated therewith, and of the scientific, cultural, and educational resources and values of the public lands in the conservation area.

The BLM and Forest Service have developed MFPs/RMPs and Forest Plans, respectively, for federal lands under their management. These plans specify regulations

and goals and include temporal and spatial restrictions for activities within areas managed to protect certain species. Restrictions on land use and recommendations outlined in these documents were used while planning the Project, particularly in regard to big game winter range; parturition areas; raptor nests; and State Wildlife Management Areas, SMAs, and other special land use designations. The Land Management Plans applicable to Gateway West are listed in Table 1.5-1. Tables that list the applicable stipulations from the various federal management plans, as well as whether or not the Project is in conformance with these stipulations, are found in the Administrative Record; plan amendments for instances where the Project would not be either consistent with Forest Service standards or in conformance with BLM requirements are found in Appendix F, and a summarized list is found in Tables 2.2-1 through 2.2-3.

There are multiple plan amendments proposed that, although not specifically related to wildlife, would result in alterations to current land management, such as changes to VRM class or allowing the line to occur outside of utility corridors, which could allow the permitting of additional projects in the future, further impacting wildlife. These changes in land management could occur at various locations along the Project, and they are discussed in the appropriate sections of this EIS. The impacts to wildlife of these land management changes is unknown at this point, because projects that might be proposed and developed as a result of these plan amendments cannot be predicted. However, they would presumably increase impacts to wildlife and habitat, with similar effects to this Project. Plan amendments that do relate specifically to wildlife are discussed in detail below.

State Regulations

Both Idaho and Wyoming have laws relating to hunting and fishing that include bag or possession limits for species and seasonal restrictions. In general, both states recognize wildlife and fish species that a) are fully protected and therefore not subject to hunting or fishing; b) may be fished for, hunted, trapped, or otherwise harvested under specific regulations, licensing, and timing restrictions; and c) may be harvested at any time by anyone in possession of a valid hunting or fishing license. In addition, both states have conducted surveys and have designated areas that are crucial to the survival of big game species (see Appendix E, Figures E.10-3 and E.10-4).

In both Wyoming and Idaho, there are specified hunting and fishing seasons for big and trophy game species (including deer, elk, moose, pronghorn, and mountain lion), waterfowl, upland game birds and mammals, and fish, during which these animals can be taken by hunters in possession of a valid state hunting or fishing license. Taking any of these animals outside the proper game management unit or outside the specified dates is prohibited and is punishable by law (State of Wyoming 2008; IDFG 2010). In addition, in Idaho, game, song, insectivorous, rodent killing, and innocent birds are protected under Title 36, Chapter 11, Statute 36-1102, punishable with a fine and/or jail time (Idaho Legislature 2009). In Wyoming, no eagle may be taken, nor may the nest or eggs of any predacious or nonpredacious bird be taken or destroyed (Wyoming statutes 23-3-101, 23-3-108), punishable with a fine and/or jail time (Wyoming statute 23-6; State of Wyoming 2008).

Both Idaho and Wyoming have regulations and requirements controlling how water passage devices (culverts) are placed in streams. The Idaho Stream Channel Protection Act protects streams from modifications that would adversely impact their ability to provide habitat for fish and wildlife. The Idaho Department of Water Resources (IDWR) must approve in advance any work being done on continuously flowing streams. A permit from the IDWR is required before beginning any work that would alter a stream channel. Wyoming has the Wyoming Industrial Development Information and Siting Act, which has broad regulatory authority to site projects to avoid impacts to wildlife and require mitigation necessary to protect wildlife species. The WDEQ has also designated water quality standards that apply on all except Indian lands in the state. These standards cover a broad range of issues, including maintaining water quality and habitat conditions for fish.

3.10.1.4 Methods

Multiple methods were used to determine the location of wildlife habitat within the Analysis Area. These included use of:

- Existing information provided by BLM FOs, Forest Service ranger districts and Forest Headquarters offices, and statewide wildlife databases;
- Remote sensing and interpretation, including a GIS model that assessed wildlife habitat based on the presence of vegetative communities and key habitat characteristics; and
- Limited aerial and ground field surveys in 2008 through 2010 (Tetra Tech 2010a, 2010d, 2010e).

Methods used to determine the level of potential effects to fish habitat and fish resources followed those used for water resources and wetlands (Sections 3.16 and 3.9, respectively). These included assessing the:

- Number of perennial streams crossed,
- Amount of riparian vegetation removed, and
- Amount of water removed from the system and the resulting downstream impacts.

Existing Information

The BLM and the Forest Service have developed databases and maps of wildlife habitat types and occurrences of individuals on public lands (e.g., BLM Southern Idaho Infrastructure Development Conflict Map; BLM 2012a). The state wildlife departments (WGFD, Idaho Department of Fish and Game [IDFG], and Utah Division of Wildlife Resources) also maintain databases on inventories of wildlife species and their habitats on both public and private lands. Those databases were consulted (in conjunction with field surveys for raptor nests; discussed below) to identify the known locations of big game habitats (winter, parturition, summer, and year-long ranges) and the known locations of active (occupied by a breeding pair in a given year) or historical raptor nests on both public and private lands. For big game winter range, areas considered were “winter range” and “crucial winter range” in Wyoming and “winter range” in Idaho. No designated big game areas in Utah would be affected. These designations were used

for this analysis because they have been named by the Agencies as being important to big game winter survival during periods of heavy snow. Also, they have use or timing stipulations associated with them that affect Project activities when within those designations (see Appendix I). General winter range has certain year-long stipulations related to it that restrict certain types of development. Crucial winter range is closed to physical access during winter, though an exception process exists for certain activities. Designated general and crucial winter range (Wyoming) and winter range (Idaho) will be referred to collectively in this document as “winter range.” Raptor nests within 1 mile were queried from available databases. The distance of 1 mile was used because it is the largest (most conservative) spatial buffer around breeding raptors recommended by Whittington and Allen (2008). All known active and inactive historical nest locations were included, from all years for which data were available. Because many raptor breeding pairs build alternate nests within the same breeding pair territory, using the count of nest sites creates the possibility of multiple counting of breeding pairs. At the same time, the counts of raptor nests given in this document are not meant to imply that every single existing raptor nest is included; before a final route is chosen, the knowledge of raptor nest locations is limited by the extent of these databases, which are not always maintained every year, and generally only cover public land. A thorough field survey of raptor nests will be carried out once a final route is chosen. Only nests documented to be active during the timeframe that construction activities are occurring will have restrictions applied to them, so multiple counting of nests within a given pair’s territory will also be corrected. In addition to the federal and state agency resources listed above, other sources of existing information included interviews with federal and state agency personnel, review of published scientific literature, and review of BLM and Forest Service land management plans.

Remote Sensing

Because this Project would cross public and private lands in nearly equal quantities, the BLM decided to employ remote sensing for vegetation mapping and allowed for comparison of impacts without regard to ownership or access for surveys. Project-specific high-resolution aerial imagery of vegetation was obtained in 2008 and supplemented the NAIP photography (Tetra Tech 2010a). Ground truth transects were conducted during the imagery interpretation to improve the quality of the vegetation association interpretation. A detailed description of the remote sensing interpretation can be found in the Vegetation and Habitat Baseline Technical Report (Tetra Tech 2010a).

Field Surveys

The BLM and Forest Service determined that raptor nest surveys were necessary along specific portions of the Proposed Route and Route Alternatives due to deficiencies in the existing databases of known nest locations. Aerial raptor nest surveys were conducted in portions of the Twin Falls, Pocatello, Kemmerer, Rock Springs, and Rawlins BLM FOs from April 1 through April 28, 2008. Raptor species present in the Analysis Area are analyzed in this section regardless of whether they are sensitive or have special status. Special status raptors are also addressed in Section 3.11 – Special Status Wildlife and Fish Species. Ravens (*Corvus corax*) are included in the raptor discussion because of their importance as predators to many species and their tendency to concentrate along

transmission lines (Engel et al. 1992). Seven previously unrecorded active raptor nests were identified: two active bald eagle nests, one golden eagle nest, one red-tailed hawk nest, one unidentified raptor nest, and two raven nests (Tetra Tech 2010a). Ground surveys for raptor nests were conducted along a portion of Segment 2 in the Rawlins FO on June 4 and 5, 2008. No active nests were discovered during the ground surveys, while one inactive golden eagle nest was observed. Field searches for northern goshawks (*Accipiter gentilis*) and flammulated owls (*Otus flammeolus*) were also carried out in June 2009 on the Caribou-Targhee NF, in accordance with the Caribou Forest Plan. Surveys for northern goshawks were also carried out in July 2010 on the Medicine Bow-Routt NFs, in accordance with the Medicine Bow Forest Plan. Neither of these surveys found any territorial birds or active nests.

Habitat Fragmentation

Habitat in the Analysis Area and its immediate vicinity has already been fragmented to some degree by roads, urban development, oil development, and agriculture. The Project was routed to follow these existing developments, including existing transmission lines, to the greatest extent practicable in order to limit the Project's impact on habitat fragmentation.

To assess the impact of fragmentation on habitat, the current level of fragmentation was compared to the expected level that would occur following construction. Fragmentation caused by roads, transmission lines, and both roads and transmission lines was analyzed. Fragmentation from transmission lines was analyzed separately to account for species that will readily pass under or over them. Some species, however, may avoid areas containing transmission lines, so these structures would contribute to fragmentation of their habitat (see Section 3.11.2.2 for discussion of this phenomenon). The levels of fragmentation (current and expected) were assessed within an 8-mile buffer centered along the Project's route. Because Project-specific remote sensing was not conducted out to this distance, regional GAP data were used for habitat types and locations. The current amount of fragmentation was first assessed via GIS analysis, using existing developments (excluding transmission lines) and natural breaks in habitat types. Existing roads were shown on the ESRI "Streetmap" data layer, and other developed areas were retrieved using GAP data. These data were used to calculate road densities within the 8-mile-wide buffer. The data baselayer used to assess existing transmission lines was the ESRI "Powermap" data layer. Expected levels of fragmentation were assessed by adding the proposed roads to the existing road fragmentation data, and the expected transmission route to the existing transmission fragmentation data. All these data sets were then combined into one data layer, which represented the expected level of fragmentation from existing roads, developments, and transmission lines, plus the addition of the proposed roads and transmission lines. These data allowed the assessment of the number of fragments and the average fragment size (pre- and post-construction), as well as the average change in patch number and size following construction of the Project.

3.10.1.5 Existing Conditions

This section describes habitat types crossed by the Proposed Route centerline (habitat types crossed by the Route Alternatives are listed in Table D.6-1 in Appendix D) as

characterized by the Project-specific remote imagery analysis. Where species-specific information was available or developed (e.g., raptor nest information), distances to these locations from the Proposed Route's centerline are displayed. The section goes on to use the data from BLM, Forest Service, and statewide databases to determine the miles of designated big game winter range and parturition habitat crossed, and it concludes with a discussion of the number of raptor nests within the Analysis Area.

Habitat

Section 3.6 – Vegetation Communities discusses the miles crossed by vegetation type. The vegetation types as grouped in Section 3.6 will be grouped the same way in this section so that concerns about wildlife that use them as habitat can be summarized, because the General Wildlife section cannot address every species. In this section, they are referred to as “habitat types,” rather than “vegetation types.” The general habitat types used in this discussion are detailed below, while Table 3.10-2 summarizes the wildlife species expected to typically occur within each habitat type (not meant to represent sensitive or affected species; also see Appendix E, Figures E.10-1 and E.10-2). Impacts to these habitat types are discussed below in Sections 3.10.2.2 and 3.10.2.3, as they are relevant to each segment and the Project as a whole.

Table 3.10-2. Typical Wildlife Species in the Analysis Area by Habitat Type

| Habitat Type (Vegetation Community as defined in Section 3.6) | Percent of Miles Crossed by Proposed Route and Route Alternatives | Common Species |
|--|--|--|
| Shrubland (disturbed shrubland, sagebrush, saltbrush, greasewood, and other shrubland types) | 62 | Mule deer, elk, pronghorn, coyote, Nuttall's cottontail, deer mouse, Wyoming ground squirrel, white-tailed prairie dog, sagebrush vole, Merriam's shrew, northern harrier, American kestrel, red-tailed hawk, Swainson's hawk, greater sage-grouse, Columbian sharp-tailed grouse, Say's phoebe, horned lark, black-billed magpie, sage thrasher, loggerhead shrike, green-tailed towhee, vesper sparrow, Brewer's sparrow, sage sparrow, Great Basin spadefoot toad, sagebrush lizard, short-horned lizard, western skink, striped whipsnake, racer, and Great Basin gopher snake |
| Grassland (both native and semi- natural) | 16 | Pronghorn, coyote, swift fox, badger, white-tailed jackrabbit, thirteen-lined ground squirrel, black-tailed prairie dog, northern pocket gopher, olive-backed pocket mouse, western harvest mouse, meadow vole, mourning dove, northern harrier, Swainson's hawk, common nighthawk, horned lark, vesper sparrow, savannah sparrow, lark bunting, western meadowlark, Columbian sharp-tailed grouse, short-horned lizard, western skink, prairie rattlesnake, striped whipsnake, and racer |
| Agricultural Land (including Conservation Reserve Program lands) | 13 | White-tailed deer, mule deer, swift fox, black-tailed jackrabbit, northern pocket gopher, Great Basin pocket mouse, western harvest mouse, deer mouse, American kestrel, red-tailed hawk, ring-necked pheasant, common crow, horned lark, European starling, house finch, house sparrow, Columbian sharp-tailed grouse, common garter snake, and Great Basin gopher snake |

Table 3.10-2. Typical Wildlife Species in the Analysis Area by Habitat Type (continued)

| Habitat Type (Vegetation Community as defined in Section 3.6) | Percent of Miles Crossed by Proposed Route and Route Alternatives | Common Species |
|---|---|---|
| Forest/Woodland (conifer, deciduous, and juniper vegetation communities) | 6 | Elk, mule deer, bobcat, porcupine, bushy-tailed woodrat, masked shrew, least chipmunk, marmot, deer mouse, little brown bat, red-tailed hawk, northern goshawk, great-horned owl, common poorwill, broad-tailed hummingbird, three-toed woodpecker, northern flicker, Hammond's flycatcher, gray flycatcher, Cassin's finch, Steller's jay, pine siskin, scrub jay, pinyon jay, plumbeous vireo, red crossbill, chipping sparrow, yellow-rumped warbler, black-throated gray warbler, juniper titmouse, sagebrush lizard, short-horned lizard, western skink, Great Basin gopher snake, striped whipsnake, racer, and wandering garter snake |
| Wetlands, Riparian, and Water | 1 | Terrestrial – Mule deer, white-tailed deer, moose, beaver, muskrat, mink, red fox, western harvest mouse, meadow vole, western jumping mouse, American water shrew, Canada goose, mallard, canvasback, gadwall, northern harrier, sora, red-tailed hawk, eared grebe, marsh wren, yellow warbler, common yellowthroat, red-winged blackbird, western chorus frog, Great Basin spadefoot toad, northern leopard frog, sagebrush lizard, western skink, striped whipsnake, racer, wandering garter snake, and common garter snake Aquatic – Rainbow trout, Yellowstone cutthroat trout, brook trout, mountain whitefish, carp, Utah chub, longnose dace, Piute sculpin, yellow perch, walleye, smallmouth and largemouth bass, bluegill, Bonneville cutthroat trout, mottled sculpin, speckled dace, and black crappie |
| Developed/Disturbed Lands and Unmapped Areas | 2 | Few native species; typically house sparrow, European starling, rock pigeon, American crow |

Sources: USFWS 1979, 1985, and 1993; Von Ahlefeldt et al. 1992; BLM 1994 and 2008a; Fisher et al. 2000; Sibley 2003; Stebbins 2003; National Park Service no date.

Shrublands are dominated by woody plants besides trees, in the Analysis Area usually sagebrush, saltbrush, or greasewood. This habitat type constitutes 62 percent of the miles crossed by the Proposed Route and all Route Alternatives. Healthy native shrublands are a very important habitat component for many species in the Interior West, such as sage thrasher (*Oreoscoptes montanus*), and clearing of vegetation and fragmenting of this habitat type poses a considerable threat to the reproduction and persistence of these species. The shrublands habitat type includes disturbed as well as native shrublands in the following analyses; most of the shrubland habitat type crossed by the Project has been disturbed or altered from its natural state. The different shrubland habitat types (described in Table 3.6-1) have been grouped together for analysis in this section, as impacts to the various shrubland habitat types from construction and operations would be similar. Special status wildlife species inhabiting shrubland (e.g., greater sage-grouse) are described in Section 3.11 – Special Status Wildlife and Fish Species).

Grasslands in the Analysis Area are most commonly semi-natural plant communities dominated by introduced grass species. (See Tetra Tech 2010a for a discussion of the methods used to define semi-natural and native grasslands.) Native grasslands (dominated by native species) are an important wildlife habitat type but are rare and decreasing within the Analysis Area. Approximately 7.1 miles of native grasslands are crossed by the Proposed Route and Route Alternative centerlines, which constitute less than 1 percent of the total Project length. Native grassland is found mostly along Alternative 1W(a)-B (5.0 miles) and the Proposed Route of Segment 9 (2.9 miles). Native and disturbed grassland combined make up 13 percent of the miles crossed by the Proposed Route and Route Alternatives.

Agricultural lands are areas planted in crops. They are crossed by the Proposed Routes of all Segments except 2, 3, and 6. Along the Proposed Route, agricultural lands make up the greatest proportion of miles crossed along Segment 10 (45 percent). Among the alternatives, agricultural lands make up the greatest proportion of miles crossed along Alternative 5E (44 percent). When the lengths of the Proposed Route and all Route Alternatives are added together, agricultural lands make up 13 percent of miles crossed. Section 3.18 – Agriculture discusses impacts within agricultural lands in greater detail. Agricultural lands can provide habitat for many wildlife species, but this habitat type is abundant in the Interior West. Also, the types of wildlife that tend to use agricultural lands are in general not threatened or sensitive (e.g., mule deer, European starlings, red-winged blackbirds).

Forest/Woodland habitat types are dominated by trees (conifer, deciduous, juniper, or riparian). They are found along the Proposed Routes of Segments 1W, 2, 4, 5, 7, and a trace amount (less than 1 acre) along Segment 9. However, this habitat type comprises only 6 percent of the overall number of miles crossed by the centerline of the Proposed Route and Route Alternatives. Along the Proposed Route, the greatest proportion of the forest/woodland habitat type is found along Segment 5 (23 percent of miles crossed); the alternative with the greatest proportion of forest/woodland is Alternative 7F (27 percent of miles crossed). Forested habitats are not common in the areas of Idaho and Wyoming that the Project would pass through. Where they exist, they provide important habitat for some wildlife species. Also, due to their relatively long time to maturity compared with more common habitat types in the area (a few years for grasslands, 20 to 40 years for shrublands), removed forest and woodland vegetation would take a longer time to recover (if allowed to recover), and effects of fragmentation would be more pronounced. This phenomenon would be even more pronounced for a mature forest, compared to a sapling or pole-sized forest. The NFs along the Proposed Route and Route Alternatives contain some areas defined as “mature forest.” The definition of mature forest varies by NF, but the criteria include tree size and age and cover type. There are certain wildlife species that use mature forests more than other habitat types, such as northern goshawk and American three-toed woodpecker. No old growth was identified along the Proposed Route and Route Alternatives (old growth is sometimes defined as being at least 180 years old, though the precise definition varies by region and agency).

In order to reduce visual contrast on federally managed land, where overstory vegetation would be removed for the ROW, specific sections would be “feathered.” This would be accomplished by removing some trees further into the forest than the original cut

boundary, minimizing straight lines to give a more natural appearance (see description in Section 3.2 – Visual Resources).

Wetlands, riparian areas, and open water are important and unique habitat types for many species of wildlife, especially considering their relative rarity on the landscape. Wetlands are areas where saturation with water is the dominant factor determining the nature of the soil and the plant species present. Wetlands are unique and provide vital habitat for many wildlife species, such as birds and amphibians, at some point in their life cycles. In addition, they perform many functions important to wildlife habitat quality such as sediment trapping, flood control, water filtering, erosion control, and nutrient retention. Due to the small amount of land taken up by wetlands and their disproportionate importance to wildlife and habitat, the federal government has adopted a “no net loss” policy in order to preserve this important habitat type. Riparian areas also provide unique and vital habitat for many wildlife species, as well as a movement corridor between habitat areas. Acres of wetland and riparian areas disturbed by the Project would be reconstructed, rehabilitated, and/or mitigated (see Section 3.9.3 in Section 3.9 – Wetlands and Riparian Areas). Wetlands, riparian areas, and open water are uncommon along most of the Proposed Route and Route Alternatives, comprising 1 percent of miles crossed by the centerlines.

Developed/disturbed areas contain urban and residential development. They are usually flat areas where good soil and some kind of water source are present. Whatever habitat type the land originally contained no longer exists in urban and residential areas. Isolated blocks of native or non-native vegetation are scattered throughout this habitat type, which certain wildlife species may be able to use. Because this land use type is already completely altered from its original value as wildlife habitat, impacts from the Project to developed and disturbed areas is not further analyzed in the context of general wildlife.

Unmapped areas could contain features important to wildlife that generally do not take up enough physical space to register in mapping efforts such as cliffs, talus fields, caves, kipukas, and lava tubes. These are essential habitat features for many species that use them for nesting substrate or hiding cover. Cliffs provide rock crevices and shelves raised above the ground, away from predators and somewhat protected from the elements. Talus fields are a complex habitat feature, providing nesting and hiding cover for many species. Caves and lava tubes are important as roost sites for bats, and kipukas are oases within barren volcanic ground that can be important gathering or resting places for certain wildlife species. Some of these habitat features are addressed below, where appropriate.

Much of the habitat crossed by the proposed Project has already been highly fragmented by existing developments. A total of approximately 49,091 fragments caused by roads and transmission lines currently exist within an 8-mile buffer (4 miles on either side of the center line) of the Proposed Route, with an average patch size of 421 acres (with a range in size from 0.5 to 72,207 acres). By habitat type, there are 20,156 patches of shrubland, 19,051 patches of grassland, 5,673 patches of agriculture/disturbed areas, 2,492 patches of forest or woodlands, and 1,719 patches of riparian vegetation. There would be a large degree of variability in the effects of fragmentation in the Analysis Area due to the large range of fragment sizes, distances between fragments, and the

differences among habitat function and requirements of various species (see the discussion of fragmentation in Section 3.10.2.2). Changes to this existing state of fragmentation in the Analysis Area that would be caused by the Project are discussed below in Section 3.10.2.

Big Game

Common big game species present within the Analysis Area are pronghorn (*Antilocapra americana*), elk (*Cervus elaphus*), and mule deer (*Odocoileus hemionus*). Less common big game species are mountain lion (*Puma concolor*, designated a trophy species in Wyoming, per Wyoming State Statute 23-1-101), bighorn sheep (*Ovis canadensis*), moose (*Alces alces*), and white-tailed deer (*Odocoileus virginianus*). Non-forest habitat types provide the majority of the forage for big game, while the forested habitat type (which comprises a small portion of the overall habitat that would be impacted by the Project) provides hiding and thermal cover. The BLM, IDFG, and WGFD have indicated that a full analysis of Project effects on white-tailed deer is not necessary (Hebdon 2009; Fry 2010). This is because this species is typically a forage and cover habitat generalist and has larger, less defined areas for life processes (e.g., summer and winter range) than pronghorn, elk, and mule deer. They also occur infrequently in the Analysis Area.

The Analysis Area contains wintering habitat, including designated winter range, for bighorn sheep, elk, moose, mule deer, and pronghorn (see Appendix E, Figure E.10-3). These areas are important to the health of large ungulate populations because the winters on the Wyoming steppe and in the Idaho foothills can be very harsh. The animals congregate in lower elevation and sheltered areas during winter to survive storms and to seek the available forage. Similarly, the Project would cross through important parturition areas, which the various large ungulate species use to give birth and hide their young (see Appendix E, Figures E.10-3 and E.10-4).

Mule deer winter range is crossed by each segment of the Proposed Route. Of the Proposed Route segments, the greatest proportion of mule deer winter range is along Segment 2, where 82 percent of the centerline crosses this habitat designation. The proportions of other segments' Proposed Route centerlines that are mule deer winter range vary from 6 (Segment 9) to 61 (Segment 5) percent. Designated winter range for elk and pronghorn is also crossed by many of the segments. Table D.10-1 (Appendix D) provides miles crossed by the centerlines of the Proposed Route and Route Alternatives for each big game species habitat type. Winter range for moose is crossed by Segments 2 and 4. Winter range has not been designated for the other big game species present in the Analysis Area.

The Analysis Area also contains designated parturition areas for elk. These areas are important because female elk need secluded areas with high quality food resources and adequate hiding cover for the calf. Lactation places great energy demands on cow elk, so adequate quantity and quality of food at this time is essential. Elk calves lie motionless to hide from predators, so hiding cover is also vital for their survival. There also needs to be sufficient acreage of parturition areas so that female elk can separate from each other enough that predators are not drawn to a particular area by a high concentration of females and calves. If these requirements of forage, hiding cover, and

acreage are not met, the fitness and survival of both the females and calves could be compromised. Parturition areas for elk are crossed along Segment 4.

Small Mammals

Common non-game mammals in the Analysis Area include white-tailed prairie dog, Wyoming ground squirrel (*Spermophilus elegans*), least chipmunk (*Tamias minimus*), northern pocket gopher (*Thomomys talpoides*), bushy-tailed woodrat (*Neotoma cinerea*), olive-backed pocket mouse (*Perognathus fasciatus*), Great Basin pocket mouse (*P. parvus*), western jumping mouse (*Zapus princeps*), western harvest mouse (*Reithrodontomys megalotis*), deer mouse (*Peromyscus maniculatus*), meadow vole (*Microtus pennsylvanicus*), sagebrush vole (*Lemmyscus curtatus*), Merriam's shrew (*Sorex merriami*), masked shrew (*S. cinereus*), American water shrew (*S. palustris*), little brown bat (*Myotis lucifugus*), big brown bat (*Eptesicus fuscus*), and hoary bat (*Lasiurus cinereus*). Two species that are important prey items for raptors in the SRBOP are the Piute ground squirrel (*Spermophilus mollis*) and black-tailed jackrabbit (*Lepus californicus*).

Small game and furbearing species that may be taken in the vicinity of the Project include cottontail rabbits (*Sylvilagus* spp.), snowshoe hare (*Lepus americanus*), badger (*Taxidea taxus*), beaver (*Castor canadensis*), bobcat (*Lynx rufus*), fox (*Vulpes* spp.), marten (*Martes americana*), mink (*Mustela vison*), muskrat (*Ondatra zibethicus*), river otter (*Lontra canadensis*), raccoon (*Procyon lotor*), ground squirrels (*Spermophilus* spp.), and weasel (*Mustela* spp.). Most small game and furbearing animals are fairly common, and their harvest is regulated by state game agencies.

Small mammals present in the Analysis Area utilize a wide variety of habitats, from open prairies with short vegetation (e.g., Wyoming ground squirrel) to forest (e.g., hoary bat), all of which are present in the Analysis Area. Some species have special habitat features that are necessary; for example, hoary bats sometimes roost in snags.

Reptiles and Amphibians

Non-sensitive common reptiles in the Analysis Area include wandering garter snake (*Thamnophis elegans vagrans*), Great Basin gopher snake (*Pituophis catenifer deserticola*), sagebrush lizard (*Sceloporus graciosus*), short-horned lizard (*Phrynosoma hernandesii*), western skink (*Plestiodon skiltonianus*), striped whipsnake (*Masticophis taeniatus*), and racer (*Coluber constrictor*). Habitat for these reptiles ranges somewhat by species. Wandering garter snake uses riparian areas. The rest of the species' habitat can be generally described as mostly dry areas with relatively open vegetation, from grasslands to open forest. Western skink and striped whipsnake are also found in talus fields and canyon rims.

Common amphibians in the Analysis Area include Great Basin spadefoot toad (*Spea intermontana*) and Pacific treefrog (*Pseudacris regilla*). The Great Basin spadefoot toad is usually found in arid to semi-arid open grasslands or sagebrush communities below 6,000 feet where water is available at least every few years. The Pacific treefrog can be found in a wide diversity of habitat types, from backyard swimming pools to chaparral to woodlands, but always near water.

Other reptiles and amphibians not listed here and with different habitat requirements than those discussed above may be found in the Analysis Area. Special status species are analyzed individually in Section 3.11 – Special Status Wildlife and Fish Species.

Birds

More than 230 species of birds occur regularly in the vicinity of the Proposed Route and Alternatives (see Table 3.10-3 for a list of common birds found within the Analysis Area). Of these, nearly all are protected under the MBTA. Virtually the entire Analysis Area could serve as habitat for at least some species of migratory birds. Habitat loss, especially of shrublands, in the interior western U.S., where the Project is located, is a major threat to migratory birds in Idaho and Wyoming. This has been due to inappropriate livestock grazing, invasion of exotic plants, changes in fire regime, degradation of riparian habitat, and conversion of sagebrush habitat (PIF 2004).

Birds that utilize the Analysis Area are extremely diverse, exhibiting a complete range of habitat types used, habitat use flexibility, ability to adapt to disturbance and habitat changes, dietary flexibility, reaction to fragmentation, and other life history characteristics. The Analysis Area crosses two Bird Conservation Regions, which are ecologically distinct regions with similar bird communities, habitats, and resource management issues: Great Basin and U.S. Northern Rockies (USFWS 2008d). Birds with the potential to occur in the area also range from species that are candidates for federal listing (e.g., yellow-billed cuckoo) to abundant invasive species (e.g., European starling). This huge variety makes generalizing about migratory birds and any effects that the Project may have on them as a group difficult. However, impacts that do apply to migratory birds as a group are described below, and special status species are analyzed individually in Section 3.11 – Special Status Wildlife and Fish Species.

Game birds that can be taken in the Analysis Area include pheasant, forest grouse (dusky, ruffed, and spruce), bobwhite, California quail, sharp-tailed grouse, greater sage-grouse, chukar, mourning dove, turkey, and gray partridge. Some of these birds are not protected by the MBTA. Most of these are relatively common, and their harvest is regulated by state game agencies.

A type of land designation designed to protect migratory birds is the IBA. These areas, designated by the National Audubon Society, provide essential habitat for at least one species of breeding, wintering, and/or migrating bird. IBAs occur on a variety of land ownerships, and may be protected or unprotected. There are three types of IBAs: global, continental, and state, based on the scope of the areas' importance to birds.

Raptors and Ravens

Several raptor species regularly nest in or near the Analysis Area: American kestrel (*Falco sparverius*), bald eagle (*Haliaeetus leucocephalus*), ferruginous hawk (*Buteo regalis*), rough-legged hawk (*Buteo lagopus*), osprey (*Pandion haliaetus*), golden eagle (*Aquila chrysaetos*), Cooper's hawk (*Accipiter cooperii*), sharp-shinned hawk (*Accipiter striatus*), northern goshawk, northern harrier (*Circus cyaneus*), prairie falcon (*Falco mexicanus*), red-tailed hawk (*Buteo jamaicensis*), and Swainson's hawk (*Buteo swainsoni*). An observation station on Commissary Ridge, just north of Kemmerer, Wyoming, lies along an important raptor migratory route, with an average of 3,665

raptors seen each fall (BLM 2008c; Mika and Hawks 2011). The most common species observed there between August 27 and November 5, 2010, were (in descending order) sharp-shinned hawk, Swainson's hawk, red-tailed hawk, Cooper's hawk, golden eagle, bald eagle, and American kestrel, with 5,602 total migrating raptors observed (Mika and Hawks 2011). Other birds of prey such as the great horned owl (*Bubo virginianus*), burrowing owl (*Athene cunicularia*), short-eared owl (*Asio flammeus*), western screech-owl (*Otus kennicottii*), flammulated owl, and common raven (*Corvus corax*) also nest in or near the Analysis Area. Of these species, all but rough-legged hawk, Cooper's hawk, sharp-shinned hawk, western screech-owl, and flammulated owl are known to nest within 1 mile of the Project. Table D.10-2 (Appendix D) lists past nesting sites for raptors that the Proposed Route or Alternatives would pass within a 1-mile buffer of (also see Appendix E, Figures E.10-5 and E.10-6). Table D.10-2 also incorporates previously known nests (from BLM and Forest Service shapefiles) and the results of the aerial and ground field surveys (Tetra Tech 2008).

Multiple raptor species are known to nest along the Proposed Route centerline. Within the Analysis Area, ferruginous hawk (292 nests, 33 percent of known nests) and prairie falcon (231 nests, 26 percent) represent the majority of the known nests. There are 158 known golden eagle nests (18 percent of known nests), 65 known burrowing owl nests (7 percent), 65 red-tailed hawk nests (7 percent), and 39 common raven nests (4 percent); all remaining raptor species detected have less than 20 nests each. Most of the ferruginous hawk nests are found along Segments 2 and 8, and most of the prairie falcon nests are found along Segment 8. The five raptor species that are the most common in the Analysis Area have specific habitat requirements and nesting habits. Ferruginous hawk, prairie falcon, golden eagle, and burrowing owl are open-country birds, living in grasslands and shrublands. Ferruginous hawks build their nests on the ground, hillsides, rock outcrops, creek banks, buttes, bluffs, sagebrush, and humanmade structures in unforested areas with good visibility. Prairie falcon and golden eagle nest most commonly on cliffs or bluffs, but also in trees, manmade structures, or other sites. Burrowing owls are closely associated with prairie dogs or other burrowing animals, as they re-use existing burrows for their nest sites. Red-tailed hawks also prefer open to semi-open habitats such as sagebrush shrublands, and in Wyoming are often found nesting in cottonwoods (*Populus* spp.; Preston and Beane 2009). The Forest Service and BLM, based on the best available science, are using one-mile buffers around the nests of all raptor species to minimize direct and indirect effects. The Proposed Route for Segment 8 lies within 1 mile of the highest number of raptor nests, 307, of any of the segments. This segment runs through the SRBOP, home to the largest concentration of nesting raptors in North America

Fish

A variety of aquatic habitats are crossed by the Proposed Route and Route Alternatives, including ephemeral and perennial streams, springs, lakes, irrigation canals, and stock ponds. Fish habitat is shaped by both local and upstream conditions. The habitat along the route is diverse and is suitable for both cold- and warm-water species depending on location. Quality varies by location, orientation, geographic land form, vegetation, and past and current land uses, among other factors.

Shoreline/bank vegetation, particularly large trees in the riparian areas, helps moderate temperature and supply input of organic debris in the form of leaves, terrestrial insects, and large woody debris (LWD). All of these are important components of habitat quality along the Proposed Route and Alternatives, and vary by location. Of the Proposed Routes, Segment 4 has the greatest proportion of wetland/riparian vegetation (these two habitat types were combined for analysis), with 4 percent of its length falling in this habitat type. Segment 7 has the least amount of wetland/riparian habitat, representing 0.2 percent of its length. Segment 10, however, has the highest amount of open water of any segment, at 1 percent of its length. Segment 7 has the least open water, at only a trace amount of its length. The major watersheds in the Analysis Area are the Platte (tributary to the Missouri), Green (tributary to the Colorado), and Snake (tributary to the Columbia) Rivers. At least 21 native and 14 non-native species of cold- and warm-water fish are present in the drainages crossed by the Proposed Route and Route Alternatives (BLM 2006b, 2008a).

Warm-Water Species

Many non-native warm-water fish have been introduced to the Analysis Area and can be found in all three major drainages, such as common carp (*Cyprinus carpio*), yellow perch (*Perca flavescens*), walleye (*Sander vitreus*), smallmouth bass (*Micropterus dolomieu*), largemouth bass (*M. salmoides*), bluegill (*Lepomis macrochirus*), and black crappie (*Pomoxis nigromaculatus*). Walleye and bluegill are native in the Platte River downstream of the Analysis Area, but are non-native within the Analysis Area (USGS 2009).

Cold-Water Species

The most common native fish along the Proposed Route and Route Alternatives (particularly in the central portion of the Project) are considered cold-water species. Many are non-game species such as dace, sculpins, and some suckers. At least seven species and sub-species of trout may be present. Rainbow trout (*Oncorhynchus mykiss*), which is non-native above Shoshone Falls but a highly popular sport species, has one of the largest distributions of any fish within the Analysis Area and is found in all three major drainages. Brook trout (*Salvelinus fontinalis*) and brown trout (*Salmo trutta*) are also non-native and also common in all three watersheds, with brook trout being more common in smaller colder streams than brown trout. Lake trout are present in Bear Lake due to artificial stocking. Bonneville cutthroat trout (*Oncorhynchus clarki utah*) are native to Bear Lake, the Bear River, and its tributaries. The Yellowstone cutthroat trout (*Oncorhynchus clarki bouvieri*) is found at various locations in the Snake, Bighorn River, and Yellowstone River drainage systems in Montana, Wyoming, Idaho, Nevada, and Utah, and is present along the Project in Idaho within Marsh Creek along Segment 4, various portions of the Snake River, and in various creeks along Alternative 7K (IDFG 2007; Gresswell 2009). Trout are most numerous in high-elevation forested drainages. This is likely at least in part due to the inaccessibility of these areas, resulting in low road density, less development, less disturbed riparian areas, and lower stream temperatures than lowlands, which are easier to develop. High elevation forested drainages are all more conducive to maintaining healthy populations of native trout species. Mountain whitefish (*Prosopium williamsoni*) are a common native game fish found in the Green and Snake River watersheds. Longnose dace (*Rhinichthys cataractae*) is found in the

Snake and Platte Rivers (where it is native) and in the Green River (where it is introduced). Speckled dace (*R. osculus*) and mountain sucker (*Catostomus platyrhynchus*) are found in and are native to the Snake and Green Rivers. Utah sucker (*C. ardens*) and Utah chub (*Gila atraria*) are native in the Snake River and introduced in the Green River.

3.10.2 Direct and Indirect Effects

This section is organized to present effects to wildlife from construction, then operations, followed by decommissioning activities for the proposed Project. Route Alternatives are analyzed in detail below in Section 3.10.2.3. Within each category there are sections that address effects on habitat (including fragmentation), big game, migratory birds, raptors, and fish.

EPMs are presented in detail within this section only if it is the first time they have been discussed in Chapter 3; all other measures are referenced or summarized. A comprehensive list of all EPMs, and the land ownership to which they apply, can be found in Table 2.7-1 of Chapter 2.

3.10.2.1 No Action Alternative

Under the No Action Alternative, the BLM would not issue a ROW grant to the Proponents of Gateway West and the Project would not be constructed across federal lands. No land management plans would be amended to allow for the construction of this Project. No Project-related impacts to wildlife species would occur; however, impacts would continue as a result of natural events (such as fire, drought, and severe weather) as well as from existing developments within the Analysis Area and from other projects, including wind farms, mining, agricultural, or other competing land uses. The demand for electricity, especially for renewable energy, would continue to grow in the Proponents' service territories. If the No Action Alternative is implemented, the demand for transmission services, as described in Section 1.3, Proponents' Objectives for the Project, would not be met with this Project and the area would have to turn to other proposals to meet the transmission demand. Under the No Action Alternative, impacts similar to those described below may occur due to new transmission lines built to meet the increasing demand in place of this Project.

3.10.2.2 Effects Common to All Action Alternatives

Discussions in this section are broken down into construction and operations. Greater amounts of land would be disturbed during construction than operations. Following operations, restoration of certain disturbed areas, needed for construction but not operations, would occur, so that only part of the acreage of impacts for construction would continue to be impacted during operations.

Construction

Habitat

A direct impact on wildlife habitat would be removal of vegetation for roads, pads for transmission towers, transmission line safety, and ancillary facilities including regeneration stations, substations, laydown yards, and fly yards. Clearing of vegetation

for these Project facilities would decrease habitat quantity and quality for wildlife species, and the degree of this impact would vary depending on vegetation type and recovery time. Removal of vegetation could also lead to an increase of sedimentation in waterbodies. Construction of the Proposed Route would directly affect 19,293 acres: 11,170 acres of shrubland, 2,915 acres of grassland (over 95 percent non-native), 2,356 acres of agricultural land, 1,784 acres of forests and woodlands, 527 acres of disturbed or developed land, 191 acres of wetlands and riparian areas, and 615 acres of miscellaneous and unclassified areas. Table D.6-2 in Appendix D summarizes the impact by vegetation community (and therefore on wildlife habitat) in the Analysis Area. Table D.10-6 (Appendix D) lists the number of acres of designated big game habitat that would be cleared during Project construction, while Table D.10-7 (Appendix D) lists the number of acres that would be cleared during construction within a 1-mile buffer of raptor nests.

In addition to the direct effects of habitat loss, the proposed Project could indirectly impact wildlife by decreasing habitat quality through habitat fragmentation. Fragmentation refers to the breaking up of contiguous areas of vegetation/habitat into smaller patches. Habitat fragment size plays a crucial role in landscape function and many ecosystem interactions, including the distribution of plants and animals, fire regime, vegetation structure, and wildlife habitat. Many wildlife species require contiguous patch sizes of suitable habitat of certain size and connectivity in order to carry out life functions such as foraging, finding a mate, and the dispersal of young to adjacent suitable habitat areas.

The primary way in which the Project would affect the degree of fragmentation within the Analysis Area is through the clearing of vegetation for the ROW and access roads. For some species, the generally 8-foot-wide permanent access roads (14 to 16 feet wide during construction) could serve as a barrier to movement, thereby isolating subpopulations and increasing the risk of local extirpation (Shepard et al. 2008; FHWA 2011). This would be predominantly experienced by smaller prey species, less mobile species such as snails, or those less likely to move through open areas devoid of vegetation such as forest-dependent species. Although roads may not serve as a barrier to movement for all species, roads can reduce habitat quality by creating edge effects (discussed below). As the effects of fragmentation differ depending on the species considered (Bissonette and Storch 2003; D'Eon 2007), specific effects of fragmentation on individual species groups will not be addressed within this general habitat fragmentation discussion, and will instead be addressed within the species-specific discussions in this section and in Section 3.11.

The discussions of fragmentation that follow will apply to conditions taking into account roads and transmission lines jointly. As stated above, assessments of roads or transmission lines separately are disclosed in Appendix D, Tables D.10-3a and D.10-3b and Tables D.10-4a and D.10-4b, respectively.

Impacts resulting from fragmentation would begin with the construction of the transmission line and new access roads and would continue for the life of the Project. Habitat restoration and revegetation following construction would decrease the severity of impacts from fragmentation somewhat; for example short vegetation would be allowed

to revegetate along access roads, which would allow some species to cross or use that area. There is some overlap of the fragmentation assessments between the starting and ending points of each segment, resulting in the fragments that are counted in the last 4 miles of one segment being counted again in the first 4 miles of the next segment. This was a result of creating an 8-mile buffer (4 miles on each side of the centerline) for each segment, and was necessary in order to compare the fragmentation resulting from each segment and its alternatives as separate units. However, this system of analysis means that the total number of fragments created per segment (reported in Appendix D, Tables D.10-5a and D.10-5b) cannot be summed to determine the total number of fragments created by the Proposed Route or Route Alternatives, as this would result in an overestimated value. When considering the fragmentation of habitats resulting from both roads and transmission lines, the Proposed Route (when the overlap between segments is considered) would create an additional 5,536 fragments (resulting from segmenting existing fragments and/or creating new fragments). The majority of new fragments occur within the shrubland habitat type, as this is the predominant vegetation type along the Project's length. A total of 2,645 new sagebrush/shrubland fragments would be created by the Proposed Route with a reduction of approximately 14 acres per patch compared to preconstruction conditions. Approximately 1,766 new patches of grassland, 337 of forest/woodlands, 94 of riparian/wetlands, and 694 of agriculture/disturbed lands would be created, with an average reduction in patch size of approximately 4 acres in grassland, 8 acres in forest/woodlands, 2 acres in riparian/wetlands, and 16 acres in agriculture/disturbed. A discussion of fragmentation per segment can be found in Section 3.10.2.3. The loss and fragmentation of sagebrush has been an important issue in the Snake River Plain, with almost all big sagebrush habitat being converted to cropland over the past century (Idaho Sage-grouse Advisory Committee 2006). The impact to this habitat type from Project construction could affect some sagebrush-obligate wildlife species such as the greater sage-grouse (see Section 3.11 – Special Status Wildlife and Fish Species).

An important impact of fragmentation aside from breaking up blocks of suitable habitat is an increase in edge effects. Edge effects result when two different types of habitat lie adjacent to each other. Edge effects encompass a multitude of impacts, for example affecting wildlife and habitat quality by altering nutrient flows/cycling; increasing the rate of invasion by noxious weeds, invasive wildlife species, and pathogens; lowering the carrying capacity of a habitat/patch; and disrupting meta-population dynamics (Sanders et al. 1991). Edge effects tend to be more pronounced with increasing differences in the two adjacent habitat types, for example a mature forest adjacent to a grassland. The creation of edges in forests impacts microclimatic factors such as wind, humidity, and light, and could lead to a change in plant or animal species composition within the adjacent habitat, or increase the rate of invasion by noxious weeds, invasive wildlife species, and pathogens (Murcia 1995). Compared to the interior of a forest, areas near edges receive more direct solar radiation during the day, lose more long-wave radiation at night, have lower humidity, and receive less short-wave radiation. Increased solar radiation and wind can desiccate vegetation by increasing evapotranspiration, can affect which plant species survive along the edge (typically favoring shade-intolerant species), and can impact soil characteristics. An example of changes that could occur because of this is a decline in shade-tolerant interior forest plant species such as foam flower

(*Tiarella trifoliata*) and some ferns; and an increase in disturbance-related, early colonizing species such as goldenrod (*Solidago canadensis*) and western yarrow (*Achillea millefolium*). Invasive plant species that could spread due to increased sunlight and removal of established plants include Canada thistle (*Cirsium arvense*), diffuse knapweed (*Centaurea diffusa*), and orange hawkweed (*Hieracium aurantiacum*). (See Section 3.8 – Invasive Plant Species for more information on invasive plants in the Analysis Area.) Six percent of the Project would cross the forest/woodland habitat type; therefore, edge effects particular to forests are expected to be limited to small portions of the Project.

The impacts of edge effects on wildlife, both adverse and beneficial, are highly dependent on the species experiencing these impacts, and therefore creating broad generalizations regarding impacts of fragmentation and edge effects on wildlife is problematic. For instance, some species are more susceptible to predators or nest predation near edges, while predators and some grazers/browsers could benefit from increased food availability. The change in wildlife species makeup could result in greater predation on interior-adapted wildlife species if predators attracted to ecotones, such as bullfrogs (*Lithobates catesbeianus*), raccoons (*Procyon lotor*), or common ravens, colonize the site. Not all wildlife species are affected by fragmentation and patch size identically (Bissonette and Storch 2003; D'Eon 2007). Effects of fragmentation and edge effects on threatened, endangered, and sensitive wildlife species are described in Section 3.11 – Special Status Wildlife and Fish Species.

Temporary (occurring during the construction period only) impacts on habitat would include the clearing/use of laydown yards or fly yards for storage and assembly of equipment and structures during construction. Areas that contained native vegetation prior to construction would be restored in accordance with the Proponents' Reclamation Plan and EPMs listed in Appendix B. These include WEED-2, which would apply on all lands; WEED-1 and WEED-3, which would apply on federally managed lands as well as certain applicable state and private lands [see Table 2.7-1 in Chapter 2]; and WEED-4, which the Agencies would require on federally managed lands. Areas not containing native vegetation prior to construction would be successfully reseeded with native vegetation, but there would be no ongoing effort to keep surrounding non-native species from encroaching onto the disturbed area, except on federally managed land. This would be in accordance with EO 13112, which requires federal agencies to prevent the introduction of invasive species and to not cause or promote the introduction or spread of invasive species (see Section 3.8.1.3). All revegetation efforts would be conducted in accordance with landowners' or land management agencies' requirements. Seed mixtures for use on private lands would be prearranged with the landowner (WEED-1, OM-15). In addition, the Proponents have proposed to reduce the construction-related impacts on habitat through dust control during construction.

Another direct effect on habitat from Project construction would be visual and noise disturbance, which would make habitat temporarily less suitable for some wildlife species. Some construction activities would raise the sound above ambient levels, with a predicted maximum instantaneous noise level of 80 to 90 A-weighted decibels (dBA) at 50 feet from the work site (see Section 3.23 – Noise). Ambient noise in forested habitats generally ranges from 25 to 44 decibels (dB; USFWS 2006b), and is usually lower in

open and shrub habitats such as those found along the majority of the Proposed Route. Visual disturbance could impact some wildlife species by inducing them to temporarily leave habitat in the construction area. This could have negative impacts by causing animals to move to less suitable areas, which could result in less available or lower quality forage, loss of access to preferred nesting/breeding sites, increased exposure to predation, and increased energy expenditure. The increases in noise and visual disturbance from construction would be concurrent with the presence of humans and their activities. These impacts would end immediately once construction activities ended. To minimize disturbance impacts to wildlife from blasting, the following EPM would apply on federally managed lands as well as certain applicable state and private lands (see Table 2.7-1 in Chapter 2):

- WILD-11 Any areas that may require blasting will be identified and a blasting plan will be submitted to the appropriate agency for approval. Blasting within 0.25 mile of a known sensitive wildlife resource will require review and approval by the appropriate agency.

Furthermore, an approved blasting plan would be required prior to the implementation of blasting. This plan would include measures to ensure that blasting is conducted in compliance with all federal, state, and local requirements.

Construction activities could inadvertently cause fires, causing a loss of habitat and impacting wildlife, potentially both in the short and long term. Because warm and dry conditions are likely throughout the summer, the risk of wildfires during construction of the Project may be elevated. To minimize the potential for wildfires, state and federal fire prevention requirements would be followed. All construction personnel would also be trained in wildfire risk and prevention and adequate fire suppression equipment would be maintained with each construction crew. Fire prevention measures have been developed (refer to Table 2.7-1) that outline the responsibilities of Project personnel for prevention and suppression of fires and define minimum fire prevention and suppression measures that would be used during construction of the Project. Impacts from fires caused by the Project would include changes in wildlife habitat and direct mortality to some slow-moving wildlife species.

An indirect effect on habitat that could occur during the construction period is fugitive dust dispersing from the immediate construction area. Impacts from fugitive dust would last longer than the construction timeline. High levels of fugitive dust can impact the growth of some organisms, especially mosses and lichens, and impact drinking water. Most impacts from fugitive dust would last only until the next rain event, when the dust is washed away and diluted.

Shrublands

The main impact to shrubland habitat, most of which is sagebrush, from construction would be fragmentation. Unfragmented shrublands are a vital habitat characteristic for many wildlife species, but this habitat type has been degraded, fragmented, and eliminated by conversion to agriculture, livestock grazing, invasion of exotic plants, and tree succession (Rich et al. 2005). For instance, Hann et al. (1997) estimate that over 30 percent of this habitat type in the Interior Columbia Basin has been lost. The Project

would further fragment this habitat type (see Tables D.10-3, D.10-4, and D.10-5, Appendix D). Areas cleared during construction could take over 20 years to recover and regain their function as wildlife habitat. The effects of this could include changes in plant and wildlife species composition, increase in invasive plants and wildlife, and decrease in reproductive success of sagebrush-obligate wildlife species such as sage thrasher, Brewer's sparrow (*Spizella breweri*), and sagebrush lizard.

Grasslands

Native grasslands in the Interior West have also experienced degradation and fragmentation and resultant loss of function as wildlife habitat. Temporary, construction-related removal of grasslands would cause temporary loss of this habitat type. However, vegetation would regrow following construction, and this habitat type would recover fairly quickly, especially if protected from grazing. Wildlife species that use grasslands would still experience Project-related impacts such as disturbance and increased susceptibility to predation (discussed elsewhere in this Construction section). However, the short-term loss of the amount of grassland habitat that would be disturbed during construction would likely have minimal impacts on any wildlife species, as they would move to adjacent undisturbed grassland until disturbed areas are restored to their former state following construction as long as adjacent habitats have not reached the species/niches carrying capacity.

Agriculture and Disturbed

Wildlife habitat in agricultural areas would be minimally impacted by Project construction. This is because of the abundance of this habitat type in the Analysis Area and the ability of wildlife to move to adjacent areas. Wildlife that use agricultural and disturbed areas are adaptable to disturbance, for example non-native invasive species such as European starling, species attracted to human activity such as common raven, and habitat generalists such as mule deer. Furthermore, the recovery of acres of this habitat type that would only be impacted during construction would be aided by their being replanted by farmers who want to resume earning income off of those areas. Section 3.18 – Agriculture discusses this habitat type in further detail.

Forest and Woodlands

Acres of forests and woodlands cleared during construction but allowed to recover during operations (i.e., along temporary roads that are not needed during operations) would be impacted for much longer than other habitat types. This impact would displace wildlife that use this habitat type for many generations until vegetation can recover. In addition, due to the greater potential for edge effects where this habitat type is cleared compared to the other habitat types, forest/woodlands adjacent to cleared areas would be impacted as well. Though mature forests are rare in the Analysis Area (see Section 3.6.2.2), the impacts to this forest type, such as edge effects, would be more pronounced due to the more distinct difference between mature forest and adjacent cleared areas, and the longer recovery time of this type of habitat (several decades). Wildlife species that use this habitat type, for example northern goshawk and American three-toed woodpecker, would experience habitat loss until areas regrow during Project operations, in this case, several decades. Removing trees would cause the loss of both present habitat (canopy

cover, live trees, forest understory) and potential future habitat (snags and down wood from dead, mature trees).

In the areas where feathering occurs, impacts to forests would increase somewhat, perhaps by approximately 15 percent, because of the additional tree removal outside of the construction ROW. Feathering would also decrease the severity of edge effects somewhat by making the edge between the forest and the cleared ROW less abrupt. Feathering would be a one-time vegetation treatment, and this type of ROW edge would not be maintained throughout Project operations.

Wetlands

Impacts to wetlands could include soil compaction, alteration of water flow, and conversion to a different wetland type for forested wetlands, due to the time required to restore wooded habitat. Due to EPMs related to reclamation, revegetation, weed management, stormwater pollution, and spill containment (see Section 3.9.2.2), which are designed to minimize effects to wetlands, and to mitigation that would be required on federally managed land, overall impacts to wildlife that use wetlands would likely be minimal.

The potential impacts to habitat during Project construction would affect wildlife differently, depending on the species. Due to restoration following construction, including revegetating with native plants, these effects would be minimized. However, some wildlife species are sparsely distributed and thus are more susceptible to population-level impacts from Project activities (see Section 3.11 – Special Status Wildlife and Fish Species for details on sensitive species).

Big Game

Direct impacts to big game from Project construction could include vehicle collisions, noise, habitat loss, and visual disturbance, which is a change in the viewshed of the animal that is perceived as alarming. Vegetation clearing has the potential to alter big game designated winter and parturition range. Alterations on winter range could remove forage that is already scarce during this time of year. On parturition range, removal of vegetation used for concealment could decrease the female's ability to isolate herself and hide the newborn, possibly decreasing the newborn's chance of survival. It would also decrease the amount of forage available while the female is lactating, which presents a considerable energy demand. However, for this Project, vegetation clearing in general is not expected to negatively impact big game appreciably due to the small amount of habitat affected compared to the large home ranges of these species, and because the cleared areas would still provide forage as they recover. Acres of construction impacts to designated big game winter and parturition ranges by species are listed in Appendix D, Table D.10-6.

In order to limit vehicular mortality to big game species, the following EPM would apply on federally managed land as well as certain applicable state and private lands (see Table 2.7-1 in Chapter 2):

- WILD-2 Vehicular speeds during construction and operations shall be limited to 25 mph on all unsurfaced access roads. Crew and vehicle travel will be

restricted to designated routes while on federally designated big game winter range (except for areas within the ROW).

Noise and visual disturbance associated with increased human activity could displace big game from preferred areas. These disturbances could potentially alter migratory activities during construction. Displacement of big game from both winter and parturition areas during sensitive periods could also occur. This displacement could affect over-winter survival on winter range by causing animals to mobilize stored bodily energy reserves that are needed to survive the winter when food is scarce. This could also impact reproductive success on parturition range if females are sufficiently disturbed to not provide adequate care for young.

Spatial data on big game winter range areas have been provided by the various agencies, and acres of impact by segment and alternative are provided below in Section 3.10.2.3. The Proponents would follow the limited operating periods enforced by the BLM and Forest Service (see Appendix I and Appendix B). If exceptions need to be made, the following EPM, which would apply on federally managed lands as well as certain applicable state and private lands (see Table 2.7-1 in Chapter 2), would reduce impacts to big game:

- WILD-1 Requests for exceptions from closure periods and areas will be submitted by the Proponents to the appropriate BLM Field Office in which the exception is requested through the Environmental CIC. Established exception processes on BLM-managed lands will be followed. The agency, the CIC, or a contractor chosen by the Proponents and approved by the agency will conduct any surveys and coordinate with any other agencies as necessary. Factors considered in granting the exception include animal conditions, climate and weather conditions, habitat conditions and availability, spatial considerations (e.g., travel routes and landscape connectivity), breeding activity levels, incubation or nestling stage, and timing, intensity, and duration of the Proposed action. Requests will be submitted in writing no more than 2 weeks prior to the proposed commencement of the construction period, to ensure that conditions during construction are consistent with those evaluated. The authorized officer, on a case-by-case basis, may grant exceptions to seasonal stipulations, and has the authority to cancel this exception at any time. A good faith effort will be made to act on exceptions within 5 business days of receiving a request to allow for orderly construction mobilization. The CIC will conduct any required site visit and report the status to BLM for consideration of the decision to accept or deny the request. There is no exception process for NFS lands; all closure periods will be adhered to. Any proposed modifications to closure periods will be discussed on a case-by-case basis with the Forest Service.

Indirect effects on big game from Project construction would include fugitive dust, increased human activity, and habitat alteration. Increased unauthorized (non-Project-related) human activity along the ROW and Project-related roads could cause increased disturbance to big game. This could temporarily render habitat where activity is

occurring unsuitable and could increase energetic demands on animals as they move away from the disturbance. This could be especially problematic if it occurred on designated winter range or in parturition areas during critical times of year. An increase in unauthorized human presence in the Analysis Area could also potentially lead to increased harvest of big game and an increased risk of fire, which would alter habitat for big game.

Small Mammals

Direct Project impacts to small mammals would include disturbance, injury and mortality, habitat loss and fragmentation. Potential indirect effects would include habitat alteration, change in prey or forage species, and an increase in susceptibility to predators. Impacts to small mammals during construction would not differ appreciably along the length of the transmission line, and they are not analyzed by segment below in Section 3.10.2.3.

Noise, visual, and ground-vibration disturbance would last for the time of construction in any one area, and would end immediately upon cessation of these activities. To minimize disturbance to roosting bats, the following EPM would apply:

- WILD-5 Surveys will be conducted along the route across the Caribou-Targhee NF prior to construction for caves, abandoned mines, and adits. If suitable bat roosts are identified, the Proponents will consult with the Forest Service to determine appropriate protective measures.

Mortalities to small mammals could occur due to collisions from vehicles and construction equipment and/or crushing of inhabited dens, burrows, snags, or logs, especially when young are present. The impact of mortality of individuals would vary depending on the reproductive strategy of the species and the robustness of the population. Mortality of an individual could have no discernible effect on a large, quickly reproducing population, but could have an effect that lasts generations on a small, vulnerable, or slowly reproducing population. Because small mammals typically bear many young, populations are generally able to absorb reasonable amounts of mortality. Bats are an exception to this reproductive strategy, as they mostly bear only a single litter per year, produce one young at a time, and do not breed until their second year (Nagorsen and Brigham 1993). Mortality would have a greater impact on animals such as bats that reproduce slowly, or populations that are already small. The likelihood of small mammals being injured or killed would decrease with increased mobility of some species; for example, small fossorial animals such as shrews would likely be more susceptible than bats, which are very mobile.

During clearing and digging, surface and underground habitat for small mammals, including maternity dens or hibernacula for bats, could be lost, altered, or disturbed. These changes could cause habitat to become unsuitable for some species by removing hiding cover from predators or altering populations of prey or forage species. Some of these changes would be temporary, for example until grass, forb, or shrub communities grew back, while some would last for the life of the Project, for example for small mammals that require the forest or woodland habitat type. Bat maternity colonies or hibernacula would be avoided to the extent practical in order to avoid or minimize impacts to bat species. Habitat fragmentation would also have an impact on many small

mammals. Gaps in formerly contiguous blocks of habitat could cause those areas to become unsuitable for certain species of small mammals. Increased edge effects brought about by fragmentation could also degrade habitat for some species, potentially sufficiently so that it becomes unsuitable. As many small mammals are prey species, crossing gaps that do not contain vegetative cover could increase their chances of being preyed upon by visual predators such as raptors. Additionally, as transmission lines increase perching and nesting opportunities for raptors, the predation risk for small mammals is also intensified.

The severity and effects of all of these impacts would vary by the species of small mammal impacted. For species with populations that already in precarious states (e.g., black-tailed jackrabbit in the SRBOP), the impacts of transmission line construction could be substantial.

Based on observations at existing power lines, it is possible that the Project could become an attractant to raptor and ravens for nesting and perching habitats (Gilmer and Wiehe 1977; Knight and Kawashima 1993; Steenhof et al. 1993; Connelly et al. 2004; Manzer and Hannon 2005; Coates and Delehanty 2010). The numbers of ravens and raptors that use existing transmission lines for perching habitat can become quite substantial. For example, a study conducted along a 500-kV transmission line that spanned from south-central Idaho to south-central Oregon found approximately 2,100 ravens at a single roost that spanned approximately 4 miles of the transmission line and 15 towers (Engel et al. 1992). Although the presence of this 500-kV transmission line resulted in an increase in the number of ravens within the roosts, Engel et al. (1992) concluded that each of the major roosts found during the study were situated in an area where ravens had roosted communally before the line was constructed (i.e., the transmission line did not create these roosts). If the Project's transmission line and structures becomes an attractant to raptor and raven, and their numbers increase along the Project, this factor coupled with the reduced shrub cover in areas recovering from construction disturbances (i.e., a reduction in hiding cover for small animals) could result in increased predation rates on prey species, including small mammals. The primary mammalian prey species for diurnal predatory birds in the Project area include, but are not limited to, ground squirrel, black-tailed jackrabbits, cottontails, while many nocturnal raptor species take voles, mice, and rats (Snake River Birds of Prey RMP 2008). Increase predation rate on prey has the potential to subsequently impact raptor populations. For example, the population size and health of golden eagles in SRBOP has been linked to the population size of jackrabbits (Steenhof et al. 1997; Snake River Birds of Prey RMP 2008); as a result, increase predation rates on jackrabbits in SRBOP has the potential to impact the population size and health of golden eagles in SRBOP.

The extent that this potential increased predation pressure could have depends on the hunting range of predatory avian species. For example, non-breeding pairs of ravens have been documented to travel an average of 4.3 miles (6.9 kilometers) and up to 40.5 miles (65.2 kilometers) in Idaho from roost sites to food sources and 16.8 miles (27 kilometers) in Michigan (ranging from 0.5 to 91.3 miles [0.8 to 147.0 kilometers]), with breeding pairs often traveling up to 0.8 mile (1.3 kilometer) while searching food (i.e., they were flying to a landfill), and 0.35 mile (0.56 kilometer) while hunting (Engel and Young 1992; Boarman and Heinrich 1999). Golden eagle hunting ranges vary by

season and location, but are typically very large (e.g., around 161.6 square miles [260 square kilometers]; DeGraaf and Yamasaki 2000).

The effect of increased raptor and raven predation rates on prey species would be most prominent where the Project is located in areas that do not contain other tall structures, such as existing transmission lines or trees. Approximately 63 percent of the Proposed Route is located within 1 mile of existing transmission lines that already serve as nesting and perching habitats for raptors and ravens. In these areas, the Project could cumulatively add to the numbers of raptors and ravens that are already utilizing existing transmission lines in the general area. In the remaining areas where the Project would not be collocated with existing lines or other tall natural structures (e.g., forested habitats), it could create new nesting and perching opportunities. Of the 369.3 miles of the Proposed Route that are not located within 1 mile of an existing line, about 343.4 miles are located within non-forested habitats (or 35 percent of the Proposed Route's length). It is in these areas that the effects of potential consolidation of raptor and raven populations on prey species (including small mammals) would be most pronounced.

In areas with collocation of portions of this Project with existing power lines, as well as the implementation of EPMs (e.g. TESWL-1), the Project is not expected to adversely impact small mammals at the population level. However, impacts on small mammals are expected to be more pronounced in areas where the Project is not collocated with existing lines, such as portions of Proposed and Alternative Routes for Segments 8 and 9 through the SRBOP (the BLM's Preferred Routes for Segments 8 and 9 largely avoids crossing the SRBOP).

To reduce the effects of the Project on raptor/raven predation pressures, the Agencies would require EPM TESWL-1 on federally managed lands, and the Proponents have indicated that they would also apply this EPM to certain applicable state/private lands (see Table 2.7-1 in Chapter 2). To be consistent with the enhancement requirement of P.L. 103-64, the (potential) impacts to raptor populations and habitats in SRBOP are more than offset (i.e. enhanced) by appropriate compensatory off-site mitigation identified in the BLM's preferred alternative for Segments 8 and 9, in addition to the on-site mitigation identified in the EPMs.

TESWL-1 H-frame structures shall be equipped with anti-perch devices to reduce raven and raptor use, and limit predation opportunities on special status prey species.

TESWL-1 requires that anti-perch devices be used in certain locations. Although some studies have found mixed results regarding the effectiveness of perch deterrents and anti-perch devices, the effectiveness of these deterrents has been supported by current research (Lammers and Collopy 2007; Oles 2007; HawkWatch International 2008; Prather and Messmer 2010; Slater and Smith 2010). For example, during a study on H-frame lines in Wyoming, Slater and Smith (2010) found that perch deterrents were highly effective in reducing perch use by raptors; with a 13- to 45-fold difference in perch use between deterred and non-deterred lines (Slater 2012). Oles (2007) provided further evidence that perch deterrents may be effective in limiting perching by raptors and ravens. Even though the effectiveness of these deterrents has been questioned by power companies in the past, they remain one tool amongst the total

minimization/avoidance measures necessary to limit potential impacts. Furthermore, these devices are required as part of some of the BLM district RMPs (e.g., the Kemmerer RMP's Wildlife Management requirements). The final design and specifications of the perch deterrent and anti-perch devices that would be used would need to be proposed by the Proponents and approved by the BLM prior to their installation; however, the BLM has utilized the "Mini Zena" perch deterrent in the past and would likely approve their use if they were proposed for use by the Proponents for this Project.

Reptiles and Amphibians

Direct Project impacts to reptiles and amphibians would include disturbance from vehicles, personnel, and blasting; injury and mortality; and habitat loss and fragmentation. Potential indirect effects would include habitat alteration, change in prey species, and an increase in susceptibility to predators. Impacts to reptiles and amphibians during construction would not differ appreciably along the length of the route, and they are not analyzed by segment below in Section 3.10.2.3.

Noise, visual, and ground-vibration disturbance would last for the time of construction in any one area, and would end immediately upon cessation of these activities. Increased levels of noise could impact frogs by masking mating calls, making it more difficult to find a mate.

The severity of injuries would vary depending on the injury type. The impacts of injuries could range from a minor injury with no noticeable effect to permanent damage that could decrease reproductive success of an individual or increase vulnerability to predation. The impact of mortality of individuals would vary depending on the reproductive strategy of the species and the robustness of the population. Mortality of an individual could have no discernible effect on a large, quickly reproducing population, but could have an effect that lasts generations on a small, vulnerable, or slowly reproducing population. Most reptiles produce a moderate number of young per year (e.g., a few to a dozen, occasionally two dozen or more), do not reach maturity until their second or third year, and do not always reproduce every year (Storm and Leonard 1995). Amphibians may also not reproduce until their second year, but lay up to 1,000 eggs. Therefore, both reptiles and amphibians are moderate in their ability to recover from population perturbations such as the death of individuals, but amphibians are likely better able to recover than reptiles due to the greater number of young that they produce. A small population, however, would experience a greater impact than a large one, regardless of the species, due to the number of reproductive individuals remaining.

During clearing and digging, surface, underground, and aquatic habitat for reptiles and amphibians could be lost, altered, or disturbed. These changes could cause habitat to become unsuitable for some species by removing hiding cover from predators, altering populations of prey species, or impacting water quality. Some of these changes would be temporary, for example until grass, forb, or shrub communities grew back or until suspended sediment settled out, while some would last for the life of the Project, for example removal of forest or woodland habitat type. Habitat fragmentation would also have an impact on some reptiles and amphibians. Gaps in formerly contiguous blocks of habitat could cause those areas to become unsuitable for certain species, for example

sagebrush lizard. Increased edge effects brought about by fragmentation could also degrade habitat for some species, potentially sufficiently so that it becomes unsuitable. Crossing gaps that do not contain vegetative cover could increase the chances of reptiles and amphibians being preyed upon by visual predators such as raptors, and would also increase the chances of amphibians desiccating while they cross areas without cover from the sun.

Another potential direct impact to amphibians is improperly installed culverts, which can fragment stream habitats and compromise stream stability. However, all temporary and permanent culverts would be designed and installed to ensure the free flow of water and upstream and downstream passage of aquatic organisms, including all life stages of amphibians that are present or potentially present within the given reach. Construction and decommissioning of culverts would be carried out under a Construction General Permit required for stormwater operations, which includes the development of BMPs to protect surface water from stormwater runoff. BMPs to minimize sedimentation during construction would also be employed. All culverts would be inspected regularly for proper functioning. In addition, the following EPM would be required on federally managed lands as well as certain applicable state and private lands (see Table 2.7-1 in Chapter 2):

- FISH-1 On BLM-managed land, all culverts, whether temporary or permanent, must be designed to meet BLM Gold Book standards (Surface Operating Standards and Guidelines for Oil and Gas Exploration Development). On NFS lands, Forest Plan standards and guidelines shall apply.

The severity and effects of all of these impacts would vary by the species impacted.

The Forest Plan for the Medicine Bow NF requires that “no loss or degradation of known or historic habitat for the boreal toad, wood frog, or northern leopard frog” would be allowed. The portion of the Project that would cross the Medicine Bow-Routt NFs would impact about 1 acre of wetland and riparian habitat capable of supporting amphibians. Boreal toads and wood frogs are not found in the project area. However, as discussed in Section 3.11, impacts would occur to northern leopard frog and habitat; as a result, a plan amendment is required. An amendment to the Medicine Bow Forest Plan is proposed that would allow the Project to cross suitable habitat for northern leopard frogs. This amendment is needed in order for the Project to be in compliance with the Medicine Bow Forest Plan. Mitigation measures would be applied to reduce impacts to the northern leopard frog habitat.

Birds

There would be some direct impacts on migratory birds and game birds, including BLM Species of Conservation Concern and Game Birds Below Desired Condition and USFWS Birds of Conservation Concern (listed below in Table 3.10-3), during construction. These impacts could include collisions with construction vehicles, other equipment, or structures; direct removal of nesting habitat; destruction of unoccupied nests; induced abandonment of nests due to disturbance; fugitive dust; and visual disturbance. There is unlikely to be measurable impacts to any non-sensitive migratory bird populations, but there would be some impact to individuals and habitat. (See

Section 3.11 – Special Status Wildlife and Fish Species for impacts to threatened, endangered, and sensitive species.)

Table 3.10-3. BLM Bird Species of Conservation Concern and Game Birds Below Desired Condition and USFWS Birds of Conservation Concern That May Occur in the Analysis Area and Are Not Addressed in Section 3.11 – Special Status Wildlife and Fish Species

| Common name | Scientific name |
|--|----------------------------------|
| BLM Species of Conservation Concern^{1/} | |
| American avocet | <i>Recurvirostra americana</i> |
| Black-billed cuckoo | <i>Coccyzus erythrophthalmus</i> |
| Black-throated gray warbler | <i>Setophaga nigrescens</i> |
| Caspian tern | <i>Hydroprogne caspia</i> |
| Lark bunting | <i>Calamospiza melanocorys</i> |
| Golden eagle | <i>Aquila chrysaetos</i> |
| Pygmy nuthatch | <i>Sitta pygmaea</i> |
| Rufous hummingbird | <i>Selasphorus rufus</i> |
| Upland sandpiper | <i>Bartramia longicauda</i> |
| Willet | <i>Tringa semipalmata</i> |
| Wilson's phalarope | <i>Phalaropus tricolor</i> |
| BLM Game Birds Below Desired Condition^{1/} | |
| Canvasback | <i>Aythya valisineria</i> |
| Harlequin duck | <i>Histrionicus histrionicus</i> |
| Mallard | <i>Anas platyrhynchos</i> |
| Mourning dove | <i>Zenaida macroura</i> |
| Northern pintail | <i>Anas acuta</i> |
| Ring-necked duck | <i>Aythya collaris</i> |
| Wood duck | <i>Aix sponsa</i> |
| USFWS Birds of Conservation Concern^{2/} | |
| Cassin's finch | <i>Carpodacus cassinii</i> |
| Eared grebe | <i>Podiceps nigricollis</i> |
| Golden eagle | <i>Aquila chrysaetos</i> |
| Green-tailed towhee | <i>Pipilo chlorurus</i> |
| Upland sandpiper | <i>Bartramia longicauda</i> |
| White-headed woodpecker | <i>Picoides albolarvatus</i> |

1/ BLM 2007c

2/ USFWS 2008d

Some species of migratory birds in the Analysis Area could experience mortality from collision with Project structures. The transmission conductors for the Project are 1.3 inches in diameter for the 230-kV lines and 1.5 inches in diameter for the 500-kV lines. They are bundled in groups of two (230-kV) or three (500-kV) that hold the subconductors in the bundle 18 to 25 inches apart from each other. The overhead ground wire or optical ground wire is 0.5 to 0.6 inches in diameter and could be harder for the birds to see and avoid in poor visibility weather conditions, such as rain or fog, than the transmission conductors. The frequency of avian collisions with structures is influenced by several factors, including the configuration and location of the structure; the species of bird; and environmental factors such as weather, topography, and habitat (APLIC and USFWS 2005). Line placement with respect to other structures and topography can influence the collision rate of avian species at a given transmission line. Collisions usually occur near water or migration corridors, and occur more often during inclement weather, although any structure can pose a collision risk

to birds (Manville 2005). The Avian Protection Plans prepared state-wide by Rocky Mountain Power for Wyoming and by both Idaho Power and Rocky Mountain Power for Idaho indicate that if collisions are documented, a site-specific evaluation will be conducted, and measures to reduce collision hazard will be implemented, such as marking the line by installing bird flight diverters or possibly removing the static line (overhead ground or optical ground wire) for a specific span (see the Proponents' Web sites for a copy of their Avian Protection Plans, which contain more details regarding potential measures to reduce collision hazard). These plans are in compliance with the Forest Service wildlife standards, which state that: "Where existing powerlines or electronic/communication sites are found to be adversely affecting raptor or landbird populations, work with the appropriate company to correct the problem." In order for the intent of the Proponents' Avian Protection Plans to be met, the following measure would be applied on federally managed lands as well as certain applicable state and private lands (see Table 2.7-1 in Chapter 2):

WILD-6 Guy wires will be marked with bird deterrent devices on federal lands to avoid avian collisions with structures, as directed by local land manager.

In addition, the Proponents would work with the USFWS to determine which guy wires would require flight diverters on private lands as well (per the USFWS authority under the MBTA, which applies to all land ownerships).

In addition, the following measure would apply Project-wide regardless of land ownership in response to the requirements of the MBTA:

WILD-7 Flight diverters will be installed and maintained where the transmission line crosses rivers at the locations identified in Table 3.10-4. Additional locations may be identified by the Agencies or the Project Proponents. The flight diverters will be installed as directed in the Proponents' approved Avian Protection Plans and in conformance with the MBTA and Eagle Act as recommended in the current collision manual of APLIC.

Table 3.10-4. River Crossings Where Flight Diverters Would Be Installed in Order to Reduce the Potential for Avian Collisions

| Waterbody | Segment or Alternative | Crossing Mileposts | | | |
|--------------------|------------------------|--------------------|--------|-------|--------|
| | | First | Second | Third | Fourth |
| Platte River | Proposed 1W(a) | 1.9 | – | – | – |
| | Alt. 1W(a)-B | 8.8 | – | – | – |
| | Proposed 1W(c) | 0.4 | – | – | – |
| | Proposed 2 | 37.8 | – | – | – |
| | Alternative 2A | 9.9 | – | – | – |
| | Alternative 2B | 6.1 | – | – | – |
| Medicine Bow River | Proposed 2 | 0.9 | – | – | – |
| Bear River | Proposed 4 | 125 | 149.9 | 150.5 | 173.9 |
| | Alternative 4B | 74.5 | 97.2 | – | – |
| | Alternative 4C | 84.3 | 98.6 | – | – |
| | Alternative 4D | 74.5 | 97.8 | – | – |
| | Alternative 4E | 99.2 | – | – | – |
| | Alternative 4F | 76.7 | – | – | – |
| Green River | Proposed 4 | 52.1 | – | – | – |
| | Alts. 4B,C,D,E | 0.4 | – | – | – |
| | Alternative 4F | 0.5 | – | – | – |

Table 3.10-4. River Crossings Where Flight Diverters Would Be Installed in Order to Reduce the Potential for Avian Collisions (continued)

| Waterbody | Segment or Alternative | Crossing Mileposts | | | |
|-------------------|------------------------|--------------------|--------|-------|--------|
| | | First | Second | Third | Fourth |
| Hams Fork River | Proposed 4 | 104.9 | – | – | – |
| | Alts. 4B,C,D,E | 19.8 | – | – | – |
| | Alternative 4F | 54.6 | – | – | – |
| Smiths Fork River | Alternative 4F | 73.3 | – | – | – |
| Snake River | Proposed 5 | 53.8 | – | – | – |
| | Alternative 5E | 3.6 | – | – | – |
| | Alternative 5D | 16 | – | – | – |
| | Proposed 8 | 118.5 | – | – | – |
| | Alternative 8A | 24.6 | 46.5 | – | – |
| | Alternative 8B | 42.7 | – | – | – |
| | Alternative 8E | 10.1 | – | – | – |
| | Alternative 9D | 17.9 | 48.1 | – | – |
| | Alternative 9F | 21.1 | 51.3 | – | – |
| | Alternative 9G | 17.9 | 45.6 | – | – |
| | Alternative 9H | 21.1 | 48.8 | – | – |
| | Proposed 10 | 24.3 | – | – | – |

Noise during Project construction could impact migratory birds by masking auditory communication, for example individuals defending territory or trying to attract a mate, flock members making contact calls, nestlings begging for food, or alarm calls (Parris and Schneider 2008). These impacts could have an effect on reproductive success or survival. Nesting birds are particularly sensitive to disturbance, and some disturbance could lead to nest failure or abandonment. To avoid violating the MBTA, the following EPM would apply Project-wide, regardless of land ownership:

- WILD-9 To the extent feasible, all vegetation clearing would be conducted to avoid the avian breeding season (generally April 15 through July 31, depending on local conditions and federal land management plan requirements) in order to minimize impacts to migratory birds. Where this is not feasible, pre-construction surveys within the disturbance footprint shall be conducted within seven days prior to clearing. If an active nest (containing eggs or young) of a bird species protected under the MBTA is found during either pre-construction surveys or construction activities, the nest will be identified to species, inconspicuously marked, and left in place until any young have fledged before the vegetation is removed.

Removal of trees would impact both present and future habitat for cavity-nesting birds, such as woodpeckers and bluebirds. Snags are a vital habitat element for many species, and removal of snags, plus the removal of mature trees that would become snags, would decrease nesting substrate for these species. Depending on the route selected, 297 acres of forest/woodland habitat would be removed on the Caribou-Targhee NF, 265 acres on the Sawtooth NF, and 29 acres on the Medicine Bow-Routt NFs. To reduce the impacts to cavity-dependent birds from habitat removal, the following EPM would apply on federally managed lands as well as certain applicable state and private lands (see Table 2.7-1 in Chapter 2):

WILD-10 Snags will be maintained to the extent practical and where it does not conflict with the Proponents' vegetation management specifications along the outer portions of the Project's right-of-way in order to reduce the impacts to habitat for cavity nesters.

The Caribou Forest Plan includes a standard that requires snags be retained for use by cavity-nesting birds. Therefore, an amendment to the Caribou Forest Plan is proposed that would change the management prescription for the ROW to Prescription 8.1 – Concentrated Development Area (see Appendix F-2), to which the standard for snags does not apply. This and additional amendments to the Caribou Forest Plan would result in the creation of a new corridor through the Caribou-Targhee NF. The proposed amendment actions are required in order for the Project to be approved; therefore, Project effects described for Alternative 4G and the Proposed Route through the Caribou-Targhee NF would be a result of the amendment being approved.

Potential indirect effects to migratory birds could include increased non-Project-related, unauthorized human activity along the ROW and Project roads, which could add to the intensity of disturbance within the Analysis Area. This could also increase the risk of fire, which would alter migratory bird habitat. The creation of new edges along wooded or shrubland habitat types could increase brood parasitism of avian species. These habitat types experience more pronounced edge effects than grasslands and also contain elevated perches, which brown-headed cowbirds (*Molothrus ater*) use while searching for active nests (Vander Haegen and Walker 1998). Some nest predators such as common raven and black-billed magpie that are attracted to the site by human activity and habitat edges could increase nest predation on native migratory birds. Mammalian predation on bird nests could also increase due to their use of Project-related travel corridors into new areas. Edge effects could also lead to a change in plant species composition, potentially lowering the quality of bird habitat. Impacts to migratory birds are expected to be similar along each segment, and they are not addressed for each one.

The proposed or alternative routes would cross nine IBAs (IBA type in parentheses): Cokeville Meadows NWR (state), Commissary Ridge Raptor Migration Route (state), Seedskaadee NWR (state), Shirley Basin (state), C.J. Strike Wildlife Management Area (global), Deer Flat NWR (state), Raft River-Curlew Valley (global), SRBOP (global), and South Hills (global). Table 3-10.5 lists the IBAs crossed by the Project. IBAs that are not crossed, but that are within the Analysis Area, are: Bear Lake NWR (global), Boise River (state), Mink Creek/Cherry Springs Nature Area (undetermined), Bowen Canyon Bald Eagle Sanctuary (state), Boise Ridge (state), City of Rocks National Reserve (state), Edness Kimball Wilkens State Park (state), Jackson Canyon Eagle Roost (state), Laramie Plains Lakes Complex (state), Little Sandy Landscape (state), Muddy Creek Wetlands (state), Red Desert (state), Shamrock Hills Raptor Concentration Area (global), Soda Lake (state), and Wagonhound Ranch (undetermined). Construction-related impacts to birds using these IBAs would be similar to impacts elsewhere, although the severity of impacts may be higher due to the high importance of these areas to certain species. The capacity of these areas to serve as essential habitat for migratory birds during construction may also be diminished somewhat due to these impacts.

Table 3.10-5. Important Bird Areas That Would Be Crossed by the Proposed Route or an Alternative Route, and Number of Miles Crossed

| Segment | Important Bird Area Name | Miles Crossed |
|--|--|----------------------|
| Proposed 1W(a) | Shirley Basin | 22.9 |
| Proposed 1W(c) | Shirley Basin | 8.4 |
| Proposed 4 | Cokeville Meadows National Wildlife Refuge (NWR) ^{1/} | 1.5 |
| | Commissary Ridge | 24.2 |
| | Seedskafee NWR ^{1/} | 1.2 |
| Proposed – Comparison Portion for Alternatives 4B–4F | Cokeville Meadows NWR ^{1/} | 1.5 |
| | Commissary Ridge | 24.2 |
| | Seedskafee NWR ^{1/} | 1.0 |
| Alternative 4B | Cokeville Meadows NWR ^{1/} | 2.5 |
| | Commissary Ridge | 25.1 |
| | Seedskafee NWR ^{1/} | 0.9 |
| Alternative 4C | Cokeville Meadows NWR ^{1/} | 2.4 |
| | Commissary Ridge | 27.1 |
| | Seedskafee NWR ^{1/} | 0.9 |
| Alternative 4D | Cokeville Meadows NWR ^{1/} | 2.5 |
| | Commissary Ridge | 25.7 |
| | Seedskafee NWR ^{1/} | 0.9 |
| Alternative 4E | Cokeville Meadows NWR ^{1/} | 2.4 |
| | Commissary Ridge | 27.7 |
| | Seedskafee NWR ^{1/} | 0.9 |
| Alternative 4F | Commissary Ridge | 26.9 |
| | Seedskafee NWR ^{1/} | 1.0 |
| Proposed 7 | South Hills | 9.8 |
| Proposed – Comparison Portion for Alternative 7G | South Hills | 3.3 |
| Alternative 7G | South Hills | 3.4 |
| Proposed – Comparison Portion for Alternative 7K | South Hills | 9.8 |
| Alternative 7K | Raft River – Curlew Valley | 36.2 |
| | South Hills | 31.4 |
| Proposed 8 | Morley Nelson Snake River Birds of Prey National Conservation Area (SRBOP) ^{1/} | 29.8 |
| Proposed – Comparison Portion for Alternative 8B | SRBOP ^{1/} | 27.8 |
| Alternative 8B | Deer Flat NWR ^{1/} | 0.1 |
| | SRBOP ^{1/} | 0.7 |
| Proposed – Comparison Portion for Alternative 8D | SRBOP ^{1/} | 6.9 |
| Alternative 8D | SRBOP ^{1/} | 7.9 |
| Proposed – Comparison Portion for Alternative 8E | SRBOP ^{1/} | 7.0 |
| Alternative 8E | SRBOP ^{1/} | 18.3 |
| Proposed 9 | SRBOP1/ | 13.6 |
| | South Hills | 8.3 |

Table 3.10-5. Important Bird Areas That Would Be Crossed by the Proposed Route or an Alternative Route, and Number of Miles Crossed (continued)

| Segment | Important Bird Area Name | Miles Crossed |
|--|--|---------------|
| Proposed – Comparison Portion for Alternative 9A | South Hills | 0.2 |
| Alternative 9A | South Hills | 2.1 |
| Proposed – Comparison Portion for Alternatives 9D–9H | SRBOP ^{1/} | 6.1 |
| Alternative 9D | C.J. Strike Wildlife Management Area ^{1/} | 4.7 |
| | SRBOP ^{1/} | 56.0 |
| Revised Alternative 9E | SRBOP ^{1/} | 2.7 |
| Alternative 9F | C.J. Strike Wildlife Management Area ^{1/} | 0.9 |
| | SRBOP ^{1/} | 43.1 |
| Alternative 9G | C.J. Strike Wildlife Management Area ^{1/} | 4.7 |
| | SRBOP ^{1/} | 53.3 |
| Alternative 9H | C.J. Strike Wildlife Management Area ^{1/} | 0.9 |
| | SRBOP ^{1/} | 40.3 |
| Proposed 10 | South Hills | 0.2 |
| Total | | 660.8 |

^{1/} Important Bird Areas that share names with other officially designated areas, for example National Wildlife Refuges and Wildlife Management Areas, do not necessarily share exact borders with those areas; therefore, the miles crossed shown in this table may not match numbers for these areas where they are given in tables elsewhere in the EIS.

Raptors and Ravens

Direct impacts on raptors during construction could include collision with Project structures, electrocution, disturbance due to construction noise, fugitive dust, and visual disturbance. Raptors are particularly sensitive to disturbance while building a nest and brooding, and some construction activities could cause nest failure or abandonment. In order to minimize the risk of this, the Proponents would follow timing restrictions and monitoring requirements enforced by the Agencies on federally managed land to reduce disturbance to nesting raptors (see Appendix I). All suggestions for analyses and survey protocols issued by USFWS (Romin and Muck 2002; Pagel et al. 2010; USFWS 2010a) would be considered by the Proponents in Project development and implementation. Federal, state, and local jurisdictions have requested minor changes to the Project's design and additional changes will also likely occur prior to the ROD. Therefore, the following EPM would apply regardless of land ownership:

- WILD-3 The Project will be designed and constructed in compliance with APLIC standards (APLIC 2006, 2012) in order to reduce impacts to avian species. Any changes to the Project's design, as requested by federal, state, or local jurisdictions, as well as any changes considered by the Proponents, will also be in compliance with APLIC guidance.

Seasonal and spatial stipulations that would apply to activities near raptor nests would be adhered to as appropriate (see Appendix I). Impacts to special Forest Service habitat designations for northern goshawk are described in Section 3.11 – Special Status Wildlife and Fish Species. In addition, the following EPMS would apply to all land ownerships (see Table 2.7-1 in Chapter 2):

- WILD-4 Pre-construction pedestrian or aerial nest surveys will be conducted in suitable habitat during the appropriate nesting time periods needed to identify new raptor nest locations, and to establish the status of previously identified raptor nests. Appropriate buffers will be applied to active nests during construction. All encounters of nesting raptors in the Analysis Area will be reported to the biological monitor and to appropriate agencies.
- WILD-8 Pre-construction pedestrian or aerial surveys will be completed during the appropriate nesting time periods, needed to identify each raptor species. The Proponents will provide survey results to the authorized officer for approval (see WILD-1).

The Proponents would be required to work with the BLM and USFWS (or other applicable agencies) to identify appropriate survey protocols for these preconstruction surveys (see Appendix B).

The BLM has found the above EPMS regarding surveying for raptor nests insufficient; therefore, they would require the following measure on federally managed lands in addition to the other EPMS:

- WILD-12 The Proponents will annually document the presence and location of large stick nests on any towers constructed as a result of this Project. Nests will be categorized to species or species group (raptors or ravens), to the extent possible. This would begin following the first year of construction through year 10 of operations. Results would be provided annually to the applicable land-management agency and to the USFWS.

The Project may not be in conformance with a requirement found in the BLM's RMP for the Green River Management Area, regarding raptor nests. The Green River RMP states that:

Project components, such as permanent and high profile structures, i.e., buildings, storage tanks, powerlines, roads, well pads, etc. are prohibited within an appropriate distance of active raptor nests. The appropriate distance (usually less than ½ mile) will be determined on a case-by-case basis and may vary depending upon the species involved, natural topographic barriers, and line-of-sight distances, etc. Placement of facilities, "on" (very low profile) or below ground, and temporary disruptive activities, such as occur with pipeline construction, seismic activity, etc., could be granted exceptions within ½ mile of active raptor nests, in certain circumstances.

Furthermore, the Rawlins RMP, which covers the southern half of Segment 1W and all of Segment 2, has a requirement regarding structures near raptor nests:

Well locations, roads, ancillary facilities, and other surface structures requiring a repeated human presence will not be allowed within 825 feet of active raptor nests (ferruginous hawks, 1,200 feet). Distance may vary depending on factors such as nest activity, species, natural topographic barriers, and line-of-sight distances.

The Project would cross within buffer zones of various raptor nests (see Table D.10-2 in Appendix D) within the lands covered by the Green River and Rawlins RMPs. As a result, the Project may not be in conformance with these RMPs. However, the BLM has determined that no plan amendments would be required to meet these RMP requirements because this conflict can be resolved using the administrative process outlined in the Green River RMP (refer to Appendix 2 of the Green River RMP, "Mitigation Guidelines for Surface-Disturbing and Disruptive Activities") and the Rawlins RMP (refer to Appendix 1 of the Rawlins RMP, "Mitigation Guidelines for Surface-Disturbing and Disruptive Activities").

The Medicine Bow Forest Plan has two Standards that apply to northern goshawk nests and fledging areas. Standard 5 required designation of a minimum of 200 acres as post-fledging area around selected goshawk nests that would prohibit management activities that could degrade goshawk foraging habitat. Project construction would likely occur in these areas and thus an amendment to the Forest Plan would be needed (see Appendix F-2). Standard 4 says that within each occupied northern goshawk territory, three nests with 30 acres of dense vegetation around each of them must be protected. If vegetation removal violates this standard, an amendment to the Forest Plan would also be needed. Impacts to raptors from these amendments could include increased disturbance and increased potential for collision with structures. Timing restrictions for activities near active raptor nests would be adhered to. Impacts to special Forest Service habitat designations for northern goshawk are described in Section 3.11 – Special Status Wildlife and Fish Species.

The Caribou Forest Plan has Standards and Guidelines that apply to northern goshawk nests, fledging areas, and family foraging areas. Both the Forest Service Preferred Route (Proposed Route incorporating Alternative 4G) and the Proposed Route would not meet these Standards and Guidelines. An amendment is proposed that would designate a new utility corridor for the Project with a Management Prescription of 8.1. Standards and Guidelines for protecting active and historic goshawk nesting habitat will not apply to the utility corridor and the approved access roads required for the Project, provided mitigation measures are implemented.

Raptors are vulnerable to electrocution from powerlines with conductor spacing less than the wingspan of the individual bird. For the 230-kV and the 500-kV lines that would be used for the Project, conductor spacing would vary from 19.5 feet for 230-kV H-frame structures to 36 feet for double-circuit 500-kV structures (see Appendix B for detailed drawings). The largest raptor wingspans in this area do not exceed 10 feet; therefore, there is minimal danger of electrocution from the transmission lines. Distribution lines that serve the substations and the regeneration sites are short and are located in areas with multiple other powerlines, with the exception of a longer, 11-mile stretch of

distribution lines associated with the Aeolus Substation between Segments 1 and 2. This longer stretch of distribution lines follows a county road and passes within a 0.5-mile buffer around one ferruginous hawk nest and near some golden eagle nests. Although these distribution lines already incorporate bird safety features in their design, the Proponents' Avian Protection Plan states that if mortalities due to electrocution are documented, changes to the distribution lines would be made in order to avoid future mortalities (such as by changing the arrangement of the powerlines or by excluding birds from certain areas). Therefore, the potential for raptor electrocution would be minimal.

Raptors, like other migratory birds in the Analysis Area, could experience mortality from collision with Project structures. In the discussion on migratory birds, the safeguards from the Proponents' Avian Protection Plans are supplemented with WILD-7, requiring flight diverters at identified river crossings. Those same measures would be applicable to raptors.

Potential indirect effects to raptors could include increased non-Project-related, unauthorized human activity along the ROW and Project roads, which could add to the intensity of disturbance within the Analysis Area. Disturbance from this could render some areas temporarily unsuitable as raptor habitat. This could be especially critical during the nesting season; at this time, disturbance could be sufficient to scare a raptor from its nest or disrupt brooding or feeding. Increased human presence could also increase the risk of fire, which would alter raptor habitat and prey populations, and possibly injure eggs or chicks. The impacts to habitat and small mammals described above, including habitat loss and edge effects, brought about by vegetation alterations and removal could lead to a change in plant species composition, potentially lowering the quality of habitat for raptors and/or their prey and the population size and robustness. Decreased prey for raptors will likely have direct and negative implications for the condition and trend of raptor populations.

Fish

The numbers of perennial streams crossed by roads are listed below in the segment-specific discussions. The types of crossings are shown in Table D.16-1 in Appendix D. The number of crossings varies by alternative. Roads would disturb an area about 14 feet wide along straight roads and 16 to 20 feet wide along some turns; however, construction disturbance along streambeds for crossings would be 26 feet for the simpler crossings, up to 50 feet where permanent culverts would be installed. Generally, the greater the number of stream crossings, the greater the risk to fish resources would be. At each individual crossing, however, many factors could affect the severity of impacts that would occur, including fish species present, the period when the crossing occurs, and the distance to any spawning habitat. Many of the potential impacts would be reduced or eliminated at each site by complying with relevant EPMs, the SWPPP, and CWA Section 401 and 404 permits, if applicable. These requirements usually regulate the crossing method used, BMPs required, and timing of construction in order to minimize effects during important fish life stages (e.g., spawning). All in-stream construction actions on federally managed lands would be conducted when critical fish life stages, as designated by the appropriate agency, can be avoided. The Agencies require or recommend, depending on the applicable land management plan, avoiding

perennial surface waters, wetlands, and riparian areas by 500 feet. The transmission line was routed around these areas to the degree feasible; however, some of these areas could not be avoided. The Project would not be consistent with AIZ management in the Caribou-Targhee NF. An amendment is proposed to the Caribou Forest Plan that would allow the Project within the AIZs. Channel morphology data (e.g., streambank composition, bank slope, stream substrate characteristics, stream slope, riparian vegetation characteristics) will be obtained anywhere a road will cross a stream prior to construction, and this information would be used to restore the site of the crossing to pre-Project conditions when temporary roads are decommissioned. Site-specific crossing plans will be developed for each of these areas (see TESWL-14 and WET-3, as well as EPMs described in Section 3.16 – Water Quality).

A potential direct adverse impact from construction of the Project is decreased water quality from suspended sediment. High levels of suspended sediment and associated high turbidity can have adverse effects on fish behavior and physiology (e.g., blood chemistry, gill trauma, immune system resistance), and can cause mortality if levels become high enough. Salmonids have been found in some studies to avoid areas with turbidity above about 70 milligrams/liter (Lloyd et al. 1987), while other studies suggest avoidance may occur at loads of as low as 20 milligrams/liter suspended sediment and possibly even lower depending on length of exposure (Newcombe and Jensen 1996). The impacts from suspended sediment and turbidity would be primarily limited to the period of in-stream work and a short time afterward, until sediment movement restabilized. Potential loss or disruption of fish food resources and direct and indirect injuries caused by suspended sediment would be minor, short-term, and would not substantially affect local populations. Downstream sedimentation could affect spawning habitat and egg and juvenile fish survival. Sediment entering the water column can be redeposited on downstream substrates. It can settle on spawning cobble, decreasing its quality and impacting survival of eggs and juvenile fish. Most negative impacts from sedimentation would last up to a year, as spring flooding and other hydrologic events would flush out newly settled sediment. Heavy sediment loads may last longer than a year. Site-specific characteristics including flow, substrate composition, relative disturbance, and other factors could affect the duration of construction-related sedimentation.

Another direct effect to fish would be loss of riparian habitat. Loss of the riparian habitat type from either construction of roads across streams or removal of riparian trees for transmission line clearance, especially those within one site potential tree height (the expected height of dominant tree species at maturity under growing conditions typical in the region), can have direct and indirect impacts such as reduction of stream shading, LWD input, and terrestrial organic input, and an increase in bank instability and erosion potential. Tree shading is important in maintaining cool stream temperatures, especially important in native trout waters. LWD is a major component of stream habitat in some systems, where it contributes to pool formation and sediment retention. Additionally, riparian trees supply an energy source both directly and indirectly through leaf litter and other forms of organic input. Tree roots help stabilize streambanks against erosion during high flows and help reduce fine sediment deposition with bank stability. These negative impacts to fish due to removal of riparian vegetation could be especially severe in areas

where habitat is already limited, for example along streams listed under the CWA 303(d) as habitat-impaired, by exacerbating damage or destruction to riparian habitat that has already occurred. As noted above, roads would disturb an area about 14 feet wide along straight roads and 16 to 20 feet wide along some turns; however, construction disturbance along streambeds for crossings will be 26 feet for the simpler crossings, up to 50 feet where permanent culverts will be installed. Where streamside clearing is needed to span a stream (i.e., where hazard trees exist and where vegetation would be too close to wires or towers – see Appendix B), the riparian removal could range from up to 125 to 350 feet wide depending on the width of the ROW. Riparian vegetation removal would be kept to a minimum along fish-bearing streams. Approximately 67 acres of riparian habitat would be impacted during construction of the Proposed Route (0.3 percent of total construction impacts; Tables D.9-1 and D.9-2 in Appendix D). Acres of riparian vegetation expected to be removed by segment and by alternative are given below in the segment-specific discussions in Section 3.10.2.3.

Another potential direct impact to fish is improperly installed culverts, which can fragment stream habitats and fish populations while also compromising stream stability. However, all temporary and permanent culverts would be designed and installed to ensure the free flow of water and up- and downstream passage of aquatic organisms, including all life stages of fish that are present or potentially present within the given reach. Construction and decommissioning of culverts would be carried out under a Construction General Permit required for stormwater operations, which includes the development of BMPs to protect surface water from stormwater runoff. BMPs to minimize sedimentation during construction would also be employed. All culverts would be inspected regularly for proper functioning. In addition, this EPM would be required on federally managed lands as well as certain applicable state and private lands (see Table 2.7-1 in Chapter 2):

- FISH-1 On BLM-managed land, all culverts, whether temporary or permanent, must be designed to meet BLM Gold Book standards (Surface Operating Standards and Guidelines for Oil and Gas Exploration Development). On NFS lands, Forest Plan standards and guidelines shall apply.

Another risk to fish from Project activities is hazardous materials entering surface water supplies. To prevent this, the Proponents have committed to following all state requirements for containment of hazardous materials. In order to minimize the potential for pollutants and sediment entering streams and harming aquatic resources, several procedures would be followed and permits obtained. The USEPA's CWA would be complied with, including obtaining an NPDES permit for stormwater discharges (Title 40 CFR Parts 122 and 123) and preparing two SWPPPs, one for each state crossed. In addition, measures would be followed to protect aquatic resources (WQA-1 through WQA-29). See Section 3.16 – Water Resources for more information on aquatic EPMs and permitting.

Flow reduction in downstream systems can adversely affect fish resources. Stream habitat is often limited by flow amount especially during low-flow summer conditions. However, all water withdrawals required for the Project would come from existing water withdrawals (i.e., purchasing existing water rights), which would ensure that existing water flows are not affected by Project-related water withdrawals because all water

withdrawals would be conducted in accordance with existing water withdrawals (see Appendix B).

Any water withdrawn from streams would be required to utilize appropriate screening methods to prevent uptake of fish, while still preventing fish entrapment/entrainment.

Another direct impact on fish could be underwater noise and vibrations caused by construction activities. Underwater noise has been shown to cause fish to flee the area and fish can be injured due to shock waves (Knudsen et al. 1997; Sand et al. 2001). Underwater vibrations caused by blasting could also impact fish by causing disturbance, even if the blasting does not take place directly in the water but is nearby. On federally managed lands, blasting in or adjacent to fish-bearing streams would require the appropriate fish agency's approval prior to blasting.

Aquatic invasive species could be introduced into the Analysis Area by equipment carrying propagules of an invasive species into a waterbody that does not already contain that species. The risk of this would be negligible due to the requirement that all equipment be washed prior to arriving on-site. To avoid spreading aquatic invasive species within the Analysis Area from streams containing these species to those that do not, the following EPM will apply in all wetlands and waters of the United States, regardless of land ownership. All aquatic invasive species treatments would be conducted in compliance with state-approved protocols, wherever applicable.

- FISH-3 All wetlands and waters in the project area are assumed to contain aquatic invasive species and all equipment contacting water will be properly disinfected. After work is complete in a waterbody, any equipment involved in construction in that waterbody must be washed to remove any propagules of aquatic invasive species and to prevent the spread of those species to other waterbodies.

Other indirect impacts to fish from Project construction would include increased human presence. This could lead to increased habitat disturbance, potentially resulting in decreased quality of riparian vegetation and increased in-stream turbidity. Other potential results are increased harvest of fish and increased risk of fire, which would alter riparian vegetation. An indirect effect of sedimentation is a decrease in benthic macroinvertebrates, an important food source for many fish. Sediment can settle onto cobble substrate, burying these organisms.

To restore in-stream areas following construction, temporary culverts and fill material will be removed, and disturbed areas will be reseeded.

Operations

Habitat

Effects on wildlife habitat from Project operations would include direct disturbance to habitat, alteration, and fragmentation. Following restoration after construction, the Proposed Route would still affect 3,744 acres during operations from ROW maintenance, tower bases, permanent access roads, and areas encompassed by substations (Appendix D, Table D.6-3). Of these acres, 1,436 (38 percent) would be forest/woodlands, 1,532 (41 percent) shrublands, 328 would be grassland (9 percent; 97

percent of it non-native), 200 (5 percent) agriculture, 139 (4 percent) developed or disturbed habitat, 29 (1 percent) riparian and wetland, 13 (less than 1 percent) open water, and 68 (2 percent) unclassified or miscellaneous. Inside of the ROW, except where towers or other permanent structures are located, vegetation that does not grow to a height that would interfere with the transmission lines would be allowed to regrow. Although this is classified as a “temporary” impact, in the case of sagebrush, for example, it would affect many generations of wildlife that depend on this habitat type, such as sage sparrows, until vegetation could grow back and regain its function as wildlife habitat. Vegetation removed within the permanent ROW would be maintained every 3 to 10 years (annually in some places where vegetation grows quickly, mostly where trees are present) so that only grasses, forbs, shrubs, and other low-growing plants would be present during the life of the Project. Project placement and routing is preliminary at this point, and every attempt will be made to move towers or substations that are currently positioned within wetlands and riparian habitat types out of these areas prior to construction. However, some habitat removal from riparian areas would take place due to road construction and improvement, and some wetland areas that cannot be avoided (such as areas within the Bear River floodplain) would also be impacted (see details in Section 3.9 – Wetlands and Riparian Areas). Population-level impacts to general wildlife species during operations are not expected due to the relatively small amount of habitat that would be impacted compared to most of the species’ ranges, and the stable and common status of most species (see Section 3.11 – Special Status Wildlife and Fish Species for discussion of specific special status wildlife species).

The transmission line and Project roads would fragment habitat. For most wildlife species, the principal cause of fragmentation would be roads. In order to maintain drivability, only low-growing vegetation would remain on these roads, so there would be little security cover. Where roads lie in areas previously vegetated by woody plants, such as shrublands, woodlands, and forests, they could fragment habitat and cause edge effects in adjacent uncleared habitat. In previously disturbed, agricultural, or grassland areas (891 acres along the Proposed Route during operations, or 24 percent of total operations disturbance by the Proposed Route); however, habitat fragmentation from roads would likely be minimal. This is because wildlife using disturbed, agricultural, and grassland areas already live in open environments, and the low vegetation present on the road would likely not present a barrier to movement, as opposed to wildlife species that prefer areas with thick vegetative cover. Certain species may avoid roads due to vehicle disturbance, however, so that although they may be willing to cross an open area the width of a road, the presence of vehicles along the road could decrease the amount of habitat that is considered suitable by these species. Vehicles would likely use a given location along a road once per year, and all roads built for the Project would be closed to the public.⁴

The impacts of fragmentation from roads would vary by species. While big game species can easily cross roads, for example, smaller or less mobile animals could experience some habitat fragmentation from the presence of roads (e.g., snails or salamanders that use forested habitats). (See the discussion of fragmentation effects

⁴ All roads built for the Project on public lands will be closed to the public in order to be consistent with Appendix B (POD) and agency requirements.

found in the previous Construction section, because these effects would continue through Project operations.) Trees adjacent to roads and the transmission line would also be trimmed to keep branches from blocking roads or coming into contact with the transmission line. This could increase the effects of fragmentation and edges somewhat. Fragmentation could also be caused by the transmission line itself. Although transmission lines do not cause fragmentation by removing long swaths of habitat except in forests, there is concern that some sagebrush-associated wildlife species, such as the greater sage-grouse, avoid tall structures (see grouse discussion in Section 3.11). Therefore, the transmission poles and line may contribute to habitat fragmentation in the sagebrush habitat type by inducing some wildlife species to avoid the area. Tables D.10-3a and D.10-3b in Appendix D list the number and average patch size of fragments resulting from existing roads and compare this to the post-construction conditions along each segment and alternative. Tables D.10-4a and D.10-4b in Appendix D make the same comparisons as Tables D.10-3a and D.10-3b; however, they consider only transmission lines as the source of fragmentation. Tables D.10-5a and D.10-5b in Appendix D compare the pre- and post-construction levels of fragmentation when roads and transmission lines are considered jointly.

Disturbance from maintenance activities associated with the Project has the potential to cause wildlife to avoid certain areas. In habitat types similar to those in the Analysis Area, deer and elk have been shown to avoid areas within 650 feet of roads, including roads used only by four-wheelers (Rost and Bailey 1979). Therefore, although the presence of a road in itself may not cause habitat fragmentation for large species such as deer and elk due to breakup of contiguous habitat, roads may fragment habitat by disturbing animals and keeping them away from roads. In a study on roads' effects on elk, Lyon (1983) reported that with a road density of 1 mile per square mile, habitat effectiveness for elk declined by at least 25 percent. In a study in southwest Wyoming, densities of sagebrush obligates, particularly Brewer's and sage sparrows, were reduced by 39 to 60 percent within a 330-foot buffer around four unimproved, dirt roads with traffic volumes of 10 to 700 vehicles/day associated with natural gas exploration (Ingelfinger and Anderson 2004). Studies elsewhere have shown no effect to grassland birds (bobolinks and meadowlarks) at traffic volumes of 3,000 to 8,000 vehicles/day on a small local street; however, effects were detectable up to 3,940 feet away from the road when traffic volumes rose to 30,000 vehicles/day on a multilane highway (Forman et al. 2002). Most access roads would be used approximately once per year by Proponents' staff, though substations would be accessed approximately once per month. Only minimal vegetation management would be necessary over most of the route, as the naturally occurring vegetation is low-growing. Annual post-construction surveys would be carried out by the Proponents for a minimum of 2 years to ensure that reclamation is successful, or as decided by the land-managing agency (Appendix B).

Maintenance and operations activities could disturb wildlife, decreasing the quality of habitat. Substations would be visited approximately once per month by Proponents' staff. The rest of the transmission line would be inspected aerially approximately twice per year by helicopter, and from the ground using pickup trucks or all-terrain vehicles approximately annually. These predicted traffic loads along most roads and close to substations are well below those examined in studies documenting avoidance of areas

by wildlife due to the increase in vehicular and human activities. If problems are identified during inspections, additional ground-based work would occur to fix these problems. The duration and type of work that would occur would depend on the type of problem that arises. See Appendix B for more details. The Proponents would adhere to big game closure periods while conducting operations and maintenance work (see Appendix I). Due to their relative infrequency, these operations and maintenance visits by Project staff are not expected to result in noticeable long-term wildlife avoidance of the transmission line route or of associated facilities due to disturbance by humans and vehicles.

Another potential impact to wildlife due to Project roads is direct mortality or injury by vehicle collision. This is expected to be minimal due to the primitive nature of most of the roads, which would cause vehicles to use slow speeds; the 25 mph speed limit on federally managed and certain state and private lands (see WILD-2, which was discussed earlier under “Construction”); the open habitat types throughout the majority of the Analysis Area, allowing for high visibility of large animals near roads; and the infrequency of vehicle travel along these roads.

Revegetation of disturbed areas not to be utilized during Project operations would occur. Some of the roads, such as temporary access roads to fly yards and multipurpose yards, constructed or improved as part of the Project, would be decommissioned and revegetated to preconstruction conditions following construction, while others would be kept in a usable condition for the life of the Project. However, these permanent roads would be reseeded and surrounding vegetation would be allowed to regrow following construction in order to reduce the risk of erosion while maintaining drivability. The light amount of traffic on these roads would be unlikely to compromise revegetation efforts.

Other potential impacts to wildlife habitat from Project operations are spread of noxious weeds and increased chance of fires. The spread of noxious weeds from Project operations is addressed in Section 3.8.2.2 and Appendix B. The Reclamation, Revegetation, and Weed Management Plan would be in place, so noxious weed spread would be minimized and would not be expected to negatively impact wildlife habitat in the Analysis Area. Wildfires can destroy large swaths of wildlife habitat. The risk of wildfires can increase where transmission lines are in place because transformers can malfunction or explode, wires can come into contact with trees, animals (especially birds) can come into contact with the line and short-circuit it, wires can fall and come into contact with vegetation on the ground, conductors can be brought too close to one another during storms and cause arcing, trees can fall into wires and ground the line, and dense smoke from wildfires can cause electrical lines to arc. All of these risks are more common for smaller-voltage transmission lines and distribution lines than for high-voltage lines such as would be used in Gateway West. Due to transmission line design, ROW maintenance, large separation between conductors, safety features, and EPMS, the risk of fires ignited by the Project would be minimized. The Proponents will develop a fire prevention and control plan that would require Project personnel to carry fire-fighting equipment in their vehicles (FIRE-4, and see Section 3.22 – Public Safety), although the approximately one Project-related vehicle a year that would use most Project roads for maintenance purposes (approximately once per month at substations) is not expected to contribute significantly to the risk of wildfires in the area. In order to

minimize the additional risk of fires and other impacts from unauthorized access, the Proponents would install and maintain gates on all lands except private land in Idaho along Segments 4, 5, 7, and 10 (OM-6, Table 2.7-1 in Chapter 2).

Shrublands

The major impacts to the shrublands habitat type during operations would be fragmentation and habitat loss and alteration. Fragmentation of this habitat type by Project operations would decrease its effectiveness in providing habitat for native shrub-dependent wildlife species, potentially decreasing abundance and diversity of these species locally and encouraging the spread of invasive animals, plants, and pathogens. Loss of shrublands would occur where there is long-term habitat removal (i.e., not reclaimed following construction), for example at tower and access road locations. Habitat alteration would take place where shrubs are removed and only low-growing grasses and forbs are allowed to grow. This could cause edge effects, such as increased parasitism, spread of invasive plant species, decline of forage plants, and change in prey insect makeup (Knick and Rotenberry 2002; Gilbert and Chalfoun 2011). These impacts could negatively affect wildlife species that depend on contiguous shrubland habitat type.

Section 3.6 – Vegetation Communities and Tables D.6-2 and D.6-3 in Appendix D list the quantitative impacts that would occur to shrublands.

Grasslands

The primary impact to grasslands during operations would be loss of habitat. Small areas (a total of 10 acres of native grassland, or less than 0.01 percent of the Analysis Area) would be permanently lost to tower pads and other Project facilities. This is a small amount of habitat in relation to available habitat in the surrounding area. However, native grassland is an important habitat type that is declining in the Interior West, and this loss could impact some wildlife species that depend upon the native grassland habitat type and that are sensitive to habitat loss on a very local scale.

Section 3.6 and Tables D.6-2 and D.6-3 list the quantitative impacts that would occur to grasslands.

Agriculture/Disturbed Areas

Operations impacts to agricultural and disturbed areas would be loss of habitat. This is unlikely to substantially impact any wildlife that use this habitat type due to the small amount of habitat affected (339 acres, or less than 0.01 percent of the Analysis Area), most of which would be restored following construction. In addition, species that use agriculture and disturbed areas are habituated to disturbance to some extent.

Section 3.6 and Tables D.6-2 and D.6-3 list the quantitative impacts that would occur to agricultural/disturbed lands.

Forest/Woodlands

Operations impacts to forested areas and woodlands would include habitat loss and edge effects. The loss of forested areas and woodlands would be relatively minor (less than 0.01 percent of the Analysis Area). Forested and woodland habitat adjacent to areas kept clear during Project operations would experience microclimatic changes, alterations of

vegetative structure and composition, and other effects from increased solar radiation and proximity to a different habitat type.

Section 3.6 and Tables D.6-2 and D.6-3 list the quantitative impacts that would occur to forest/woodlands.

Wetlands

Due to site restoration and mitigation, minimal impacts to wetlands are expected during Project operations. An operations impact unique to forested wetlands would be conversion to the shrub or herbaceous wetland type where they fall within the ROW maintenance corridor.

Sections 3.6 and 3.9 – Wetlands and Riparian Areas, as well as Tables D.6-2 and D.6-3, list the quantitative impacts that would occur to wetlands.

Big Game

ROW maintenance would remove thermal and hiding cover in the forest/woodland habitat type. However, the removal of the overstory could result in additional foraging habitat. This habitat loss is not likely to have a substantial impact on big game populations, as this is a minor loss relative to the amount of home range that big game species typically range over (usually hundreds of acres up to ten thousand acres). In addition, transmission line structures and access roads are not expected to affect the movement or distribution of big game species through fragmentation; big game will readily cross a double-track road or pass under a transmission line. Approximately 36 percent of the line is collocated with existing developments, which minimizes new disturbances by collocating the line in areas where existing lines already occur, thereby decreasing the potential impact of the Project on big game migratory movements. The Proposed Route and Route Alternatives would cross through big game winter range and calving/fawning areas, resulting in long-term loss of some habitat (see Table D.10-8 in Appendix D). This could impact big game during sensitive times of year. Loss of habitat on winter range (e.g., 46 by 41 feet, or 0.043 acre, per tower location) could remove some of the small amount of forage that is available during winter, potentially impacting over-winter survival. On parturition range, loss of vegetative cover could decrease the female's ability to isolate herself and hide the newborn, possibly decreasing the newborn's chance of survival, and decrease the amount of forage available.

An operations impact that could impact big game is increased human presence in the Analysis Area. Project-related operations activities include biannual helicopter flights over the line, approximately annual access on the ground by trucks or all-terrain vehicle, and periodic foot traffic as needed. See Appendix B for more details on operations and maintenance activities. Vehicle, helicopter, and human presence could impact big game animals by disturbing them and displacing them temporarily from preferred habitat areas, including from winter range and parturition areas. This displacement could cause animals to move to areas containing less quantity or quality of forage, increase exposure to predation, or affect reproductive activities. On winter range, disturbance could affect winter survival by causing animals to mobilize energy reserves that are needed to survive the winter. A decrease of energy reserves in females during the winter could also cause decreased reproductive success, by preventing pregnancy, causing fetal

loss, or resulting in less fit offspring. Disturbance by humans and vehicles in the Analysis Area could also impact reproductive success if females are sufficiently disturbed to not provide adequate care for young. The Proponents would not conduct operations and maintenance activities on winter range during closure periods (see Appendix I). Unauthorized use of the ROW could also increase harvest of big game animals. To reduce an increase in big game harvest due to non-Project-related use of Project roads, the Proponents would install gates or other barriers.

Small Mammals

Direct Project impacts to small mammals during operations would include disturbance, injury or mortality from vehicles, and habitat loss and fragmentation. Potential indirect effects would include increased human presence and increased susceptibility to predation. The severity and effects of all of these impacts would vary by the species of small mammal impacted. Impacts to small mammals during operations would not differ appreciably across the length of the Project, and they are not analyzed by segment below in Section 3.10.2.3.

Noise, visual, and ground-vibration disturbance would occur during certain operations- and maintenance-related activities, and would end immediately once these activities are completed. Potential further disturbance could occur due to increased Project-related and non-Project-related human presence in the Analysis Area. This could cause small mammals to flee or hide, using up bodily energy reserves and losing foraging time. Human disturbance at any caves or mines where bats have been documented would be limited to minimize disturbance to bats (see WILD-5).

Mortalities to small mammals could occur due to collisions from vehicles. The 25 mph speed limit would decrease this possibility by increasing the chance for small mammals to escape the path of the vehicle, though the ability of animals to get away would vary by species. The impact of mortality of individuals would vary depending on the reproductive strategy of the species and the robustness of the population. Mortality of an individual could have no discernible effect on a large, quickly reproducing population (e.g., mice), but could have an effect that last generations on a small, vulnerable, or slowly reproducing population (e.g., bats).

Habitat fragmentation could impact species of small mammals that require contiguous blocks of later-seral habitat, such as sagebrush vole and Merriam's shrew. This could potentially make currently suitable habitat unsuitable for certain species. Edge effects brought about by increased fragmentation could also render some habitat unsuitable. Gaps that do not contain vegetative cover would also make small mammals more susceptible to predation. A more detailed discussion of this phenomenon can be found in Section 3.11.2 under black-footed ferret.

Reptiles and Amphibians

Direct Project impacts to reptiles and amphibians would include disturbance, injury and mortality from vehicles, and habitat fragmentation. Potential indirect effects would include increased human presence. The severity and effects of all of these impacts would vary by the species impacted. Impacts to reptiles and amphibians during

operations would not differ appreciably along the length of the route, and they are not analyzed by segment below in Section 3.10.2.3.

Noise, visual, and ground-vibration disturbance would last while personnel and vehicles are in a particular area, and would end immediately upon departure of personnel. Potential further disturbance could occur due to increased non-Project-related human presence in the Analysis Area. This could cause reptiles and amphibians to flee or hide, using up bodily energy reserves and losing foraging time.

Mortalities to reptiles and amphibians could occur due to collisions from vehicles. The 25 mph speed limit would decrease this possibility somewhat by increasing the chance for them to escape the path of the vehicle, although many species of reptiles and amphibians are still too slow to get out of the way of vehicles traveling 25 mph. The impact of mortality of individuals would vary depending on the reproductive strategy of the species and the robustness of the population. Mortality of an individual could have no discernible effect on a large, quickly reproducing population, but could have an effect that lasts generations on a small, vulnerable, or slowly reproducing population.

Habitat fragmentation could impact reptile and amphibian species that require or prefer contiguous blocks of later-seral habitat that would not be allowed to regrow during the life of the Project. Gaps in formerly contiguous blocks of habitat could cause those areas to become unsuitable for certain species, for example sagebrush lizard. Increased edge effects brought about by fragmentation could also degrade habitat for some species, potentially sufficiently so that it becomes unsuitable. Crossing gaps that do not contain vegetative cover could increase the chances of reptiles and amphibians being preyed upon by visual predators such as raptors, and could also increase the chance of amphibians desiccating due to exposure to the sun.

Birds

Most non-special status migratory birds and upland game birds, including Species of Conservation Concern and Game Birds Below Desired Condition, are physically and behaviorally able to cross the distance between two adjacent fragments that Project roads would create due to these birds' ability to travel quickly (i.e., flight). Therefore, Project-related fragmentation during operations is not expected to have an appreciable impact on these birds (see Section 3.11 – Special Status Wildlife and Fish Species for impacts to threatened, endangered, and sensitive species). A study on nesting success of prairie birds found decreased nest success with decreased prairie fragment size, although it did not consider two-lane paved roads without a disturbed roadside to be a barrier to movement (Herkert et al. 2003); therefore, the vegetated seldom-used permanent roads and ROW would presumably also not be considered barriers. There could be some avoidance of otherwise suitable habitat and decreased nesting success due to project operations, as predators and nest parasites such as brown-headed cowbirds could use Project structures to survey for prey and find nests to parasitize.

Collisions with transmission lines and electrocutions could result in some avian mortalities during operations. Studies conducted in other areas have shown that many different species of birds collide with powerlines (CEC 2005). However, less agile birds, such as heavy-bodied birds or birds that travel in flocks, are more likely to collide with

overhead lines because they lack the ability to quickly negotiate obstacles. One estimate is that less than 0.01 percent of nocturnal migrants through wind farms are killed from collisions (Erickson et al. 2005). Thrushes, vireos, and warblers also seem to be especially susceptible (Parrish et al. 2002). Aquatic bird species such as waterfowl are prone to collisions when powerlines or associated structures are situated over water, especially the grounding wires located at the top of the structures (Meyer 1978; James and Haak 1979; Beaulaurier 1981; Beaulaurier et al. 1982; Faanes 1987; CEC 1995, 2005). The potential for collisions is expected to be greatest in the vicinity of Cokeville NWR, where waterfowl concentrations are known to occur. Placement of the lines across wetlands and water courses would constitute a hazard to waterfowl species that commonly use these habitats. Collisions are also likely to occur where the line would cross the Platte River, Medicine Bow and Little Medicine Bow Rivers, Green River south of the Seedskaadee NWR, Cokeville Meadows NWR, Bear River, Snake River near American Falls, the crossing of the Snake River near Hemingway, and various other smaller river crossings. Bird collisions are already an issue along many of the existing lines in the area; for example, collisions have been identified as an issue at the existing distribution line at the near the Borah Substation. IPC is currently working with the USFWS to modify this line in this area to address these issues.

Lighted structures are apparently very attractive to night-migrating songbirds; studies have shown that birds flock around lit structures, but continue on their migrations when these lights are extinguished (Manville 2005). Lights that appear to attract birds the least appear to be white strobe lights; solid or pulsating red lights attract more birds (Manville 2005). Also, when multiple structures must be lighted, fewer birds are impacted when all lighted structures flash simultaneously instead of at different times (Manville 2005). Most of the Project's transmission towers would not be lighted, and their presence is not expected to divert migrating birds from normal migration pathways, even though they may cause some collisions. Two military areas, however, would require lighted towers for aircraft safety per FAA regulations. The IDANG OCTC would require lights on the Proposed Route of Segment 8 (MP 90.3–108.8) and Alternatives 8B (MP 0–10.8), 8C (MP 0–6.3), 8D (MP 0–7.0), 9D/9F (MP 30.6–43.8), and 9G/9H (MP 30.6–43.5). Lights would also be required near Saylor Creek Air Force Range along the Proposed Route of Segment 9 (MP 90–96.4) and Alternatives 9D/G (MP 0–0.9) and 9E (revised) (MP 0–5.8). The type of lighting that would be used in these locations would be night vision goggle LED obstruction lights that comply with ANVIS technology (which is the current military standard for infrared lights in the 600 to 900 nanometer wavelength range). The Proponents are currently considering using the L810 infrared LED light, which meets these requirements. This light can be either red or infrared such that it is visible during normal aircraft flight or with night vision goggles. Lights may be steady or flashing, depending on the requirement and requests from the FAA or the U.S. Air Force. The collision risk is assumed to be low but not zero over the life of the Project, and WILD-7 (discussed above under Construction – Birds) would apply in addition to the Proponents' Avian Protection Plans. Electrocutions are not expected to cause substantial mortalities because the potential for this would exist only at distribution lines (see discussion above under Construction – Raptors). Lighting will also be used at substations; however, this lighting will not flash. Safety lighting at the substations will be provided inside the substation fence for the purpose of emergency repair work. Because night activities are

not expected to occur more than once per year, the safety lighting inside the substation fence will normally be turned off. One floodlight, mounted near the entry gate to safely illuminate the substation entry gate, may be left on during nighttime hours.

Birds may experience behavior changes, decreases in reproductive success, inhibited growth, and stresses to the immune system due to exposure to electromagnetic fields by perching or nesting on the transmission line (Fernie and Reynolds 2005). These effects are only likely to be experienced by birds that spend extended periods of time within the ROW, for example birds nesting on towers or within the ROW. The amount of electromagnetic radiation drops quickly to zero as one moves away from the edge of the ROW (see Section 3.21 – Electrical Environment). Although the nature and severity of these effects are uncertain (Fernie and Reynolds 2005), the potential effects of electromagnetic radiation are not likely to cause population-level impacts on non-special status birds because of the small number of birds potentially impacted.

Operations and maintenance-related activities could disturb birds, potentially altering movement or migration patterns. Vegetation, road, and other maintenance would take place usually on a 3- to 10-year cycle. At locations where vegetation grows very quickly, removal may occur annually. For routine maintenance, personnel would generally be in a given area for less than half a day. See Appendix B for more details on operations and maintenance activities. In addition, personnel would be instructed on the protection of migratory birds and relevant federal laws (see OM-21 in Table 2.7-1). Vegetation removal could also remove or alter nesting or foraging habitat for certain species. Disturbance to migratory birds could also be caused by unauthorized public access of Project-related roads. In order to minimize this risk, the Proponents would install gates. Operations-related impacts to birds using IBAs would be similar to impacts elsewhere, although the severity of impacts may be higher due to the high importance of these areas to certain species. The capacity of these areas to serve as essential habitat for migratory birds may also be diminished somewhat due to these impacts.

Raptors and Ravens

An impact from Project operations on raptors would be related to collision with the transmission towers and other structures, electrocution, electromagnetic fields, human and vehicular presence, and impacts to prey populations. Bird collisions with structures occur more often along migration routes, for example at Commissary Ridge. The Proposed Route would run perpendicular to the ridge, so most birds traveling along it would be likely to encounter the transmission line (see Figure A-5 in Appendix A). Implementation of measures WILD-6 and WILD-7 would reduce the potential for raptor collision with conductors or ground wires. The risk for electrocution would also be minimal (see Raptors section under Construction, above). Another risk to raptors is the impact of electromagnetic fields generated from the transmission lines; electromagnetic fields have been associated with thinner shells and lower hatching success in some raptor species.

The presence of transmission lines and roads is not expected to appreciably fragment habitat, because raptors are large, mobile, and easily able to cross roads and transmission lines. Fragmentation of habitat does, however, have the potential to impact some raptor prey populations, possibly decreasing raptor carrying capacity in an area.

Increased human and vehicular presence in the Analysis Area, both by Project personnel performing operations and maintenance activities along the line, and by non-Project-related use, could increase disturbance to raptors, particularly nesting raptors. This could potentially result in disruption of reproductive activities such as nest-building and feeding of young. Operations disturbance within 1 mile of raptor nests is shown in Table D.10-9, Appendix D. Operations impacts to raptors are not expected to vary appreciably in different parts of the Analysis Area, and they are not called out in the segment-by-segment discussion.

Transmission lines could have some limited beneficial impacts to raptors. Raptors use structures such as transmission towers as nesting substrate; in areas without other tall structures, raptors can also use towers as perches for hunting. However, increased perching and nesting could lead to unsustainable levels of predation on small mammals, with the potential to decrease the raptors' prey base (which is already impacted by transmission lines; see the Small Mammals sections under Construction and Operations, above) and subsequently reduce the condition and trend of the raptor populations.

Fish

Loss of riparian habitat type and its associated benefits (shade, LWD, organic input, root stability) from both road presence and the clearing of trees from the transmission line's ROW would continue to occur during operations. Reduction of LWD input from ROWs, up to 350 feet wide at some locations, would occur for the life of the Project and for several decades after decommissioning until trees in the ROW grow to mature height. However the effects would be reduced somewhat from construction as shrubs would gradually regrow and be allowed to remain along much of the ROW in riparian areas. Hazard trees removed during operations would be left in place as a source of LWD.

Non-aquatic-approved herbicides that enter the streams during ROW maintenance could have adverse effects to fish resources. Within 50 feet of streams, woody vegetation management would be conducted by hand crews (OM-17), but herbicides may still be used in selected locations to control noxious weeds and to meet vegetation management objectives. In general, most impacts to aquatic systems occur from direct spray of herbicides, drift when herbicides are sprayed, and leaching through soils and groundwater (Tu et al. 2001). To minimize impacts to aquatic systems, the following EPM would apply on federally managed lands as well as certain applicable state and private lands (see Table 2.7-1 in Chapter 2):

- OM-20 Only herbicides approved by the land-managing agency as safe to use in aquatic environments and reviewed by the Proponents for effectiveness will be used within 100 feet of sensitive aquatic resources.

Other impacts to fish from Project operations could include increased disturbance and harvest due to increased human presence and road use along the ROW. Use of the ROW could also degrade habitat quality; for example, disturbance could affect vegetation recovery following clearing and agitation of the stream bottom could result in turbidity. The presence of roads near streams could also increase erosion and increase sediment input to streams, affecting habitat quality by, for example, decreasing dissolved oxygen levels (note that culvert monitoring for fish passage would continue for the life of

the Project). Operations impacts to fish would be similar throughout the Analysis Area and are not discussed under each segment below except to list the number of stream crossings. Stream crossings include perennial streams crossed but not “avoid” streams. These streams will have no disturbance associated with them because they will be avoided.

Decommissioning

Impacts from decommissioning would be similar to construction impacts (discussed in Section 3.10.2.2, in the Construction section) and are not discussed separately below. Project facilities would be removed at the end of the operational life of the transmission line. Structures and foundations would be removed to below the ground surface level. They would not be removed in their entirety due to the large ground disturbance this would create. Soil and plants would be restored over the top of these underground foundation structures. Removal of Project structures following decommissioning would result in impacts to wildlife such as visual and noise disturbance, habitat disturbance and alteration, and risk of vehicle collisions. Wildlife may avoid areas of activity during the removal process. The duration of visual and noise disturbance impacts would be only as long as it would take to decommission a given area, and these impacts would end following cessation of these activities. The impacts from habitat alteration would have a similar duration as impacts stemming from construction. Vegetation would be restored, and different habitat types would recover more quickly than others; for example, grassland would recover in one to four years, while forest recovery would take decades. The wildlife species that use these habitat types would also take different amounts of time to return to affected areas (relatively short amounts of time for grassland species and longer amounts of time for forest species).

Another potential impact is direct mortality to some wildlife species due to trampling by equipment or personnel during structure removal. Aside from the instantaneous impact to the individual injured or killed, the duration of this impact could vary depending on the effect the loss of the animal(s) has on the local population. A robust, rapidly reproducing population may not experience any impact from the loss of an individual, while a less abundant or slower-reproducing population may feel the impact of this loss for a generation or more.

Removal of Project structures following decommissioning would result in temporary impacts to fisheries. These impacts would include increased sediment runoff to streams from increased vehicle traffic and culvert removal. Increases in turbidity from sediment input into streams would be a short-term impact, and subside shortly after ground-disturbing decommissioning activities ended. Benefits would occur from revegetation of riparian areas where ROW clearing and roads had previously existed.

Benefits to wildlife and fish from decommissioning would include habitat recovery along the ROW and roads, reducing fragmentation and edge effects. There would also be decreased human disturbance due to cessation of Project-related activities after decommissioning is completed. As roads were closed and vegetation recovered, the risk of vehicle collisions would decrease.

Long-term impacts from the Project following decommissioning would likely be minimal. Nearly all disturbed areas would be restored to pre-construction conditions, and vegetation would be monitored for a minimum of 3 years, or as decided by the land-managing agency.

3.10.2.3 Comparison of Alternatives by Segment

The Preferred Route, Proposed Route, and Route Alternatives would travel west from eastern Wyoming to southwest Idaho across mostly shrubland and disturbed habitat types. This section describes the impacts for each of the segments of the Project on wildlife and fish. Where there are Route Alternatives, this section discusses the relative impacts to wildlife of the various alternatives if those impacts vary from segment to segment. EPMs proposed to reduce impacts are found in Section 3.10.2.2, Effects Common to All Action Alternatives.

Impacts to fish resources would increase with each perennial stream crossing. Therefore, when comparing the Preferred/Proposed Route to Route Alternatives, the number of perennial stream crossings was used to help determine the impacts. In practice, however, the overall effect to fish resources would depend on what the specific stream characteristics were (e.g., size, flow, sediment type, stream slope, and bank slope and composition) and also the fish resources at or near the crossing. While the number of crossings provides a general level of potential effects to fish resources, the actual streams crossed play a significant role. The analysis of each segment and each alternative's effects on fish, however, was not carried out in the level of detail that takes into consideration the characteristics of each stream crossing and the unique issues at each location, so only the number of stream crossings is used to assess relative impacts. All stream crossings on federally managed lands would be sited, designed, and constructed according to pertinent management plan requirements (see EPMs WQA-24 and G-1 and G-2 in Table 2.7-1), but the BLM and Forest Service have no authority to require mitigation on non-federally managed land.

Below is a segment-by-segment discussion of the potential impacts that could occur to wildlife resources. Where a segment has alternatives, analyses for the various resources were carried out for both the total length of the Proposed Route, and the comparison portion for each alternative. The comparison portion is the portion of the Proposed Route that starts and ends at the same nodes as the alternative, so that they can be directly compared to each other. The discussion is organized into three categories: construction, operations, and conclusions. Conclusions are presented for only segments that have alternatives to compare. The fragmentation discussion is presented in the operations portion of the discussion. Only the resources that are relevant to each category (construction or operations), or which were not adequately covered in the Effects Common to All Action Alternatives section, are addressed below. For most resources, the amount of impacts that would occur on federally managed land are shown in the tables in parentheses; if any of those impacts on federally managed land would occur on NFS land, this is pointed out in the text.

Segment 1W

The preferred routes in Segment 1W are as follows:

| Segment | Preferred Route | Agency |
|---------------|-----------------------------|--------------------------|
| Segment 1W(a) | Proposed Route (Figure A-2) | BLM and State of Wyoming |
| Segment 1W(c) | Proposed Route (Figure A-2) | BLM and State of Wyoming |

Segment 1W is composed of Segments 1W(a) and 1W(c), both of which consist of single-circuit 230-kV transmission lines. Generally, Segment 1W(a) would be a new 73.8-mile-long transmission line, and 1W(c) would involve reconstruction of a 73.6-mile-long portion of the existing Dave Johnston – Rock Springs 230-kV transmission line. However, in the area approximately 5 miles to the north and to the south of Ice Cave Mountain, the lines shift east to avoid the ice cave. In this area, 1W(a) would be the reconstruction of the existing line and 1W(c) would be the new line. Segment 1W(a) has one alternative, Alternative 1W(a)-B, which is located north and west of the town of Glenrock and was the Proponents’ initial proposal. However, the Proposed Route was revised following the Draft EIS public comment period in order to avoid the more populated area around Glenrock. Figure A-2 in Appendix A shows the location of the Segment 1W routes. The most common habitat type along the Preferred/Proposed Route is shrubland (77 percent of miles crossed for 1W[a] and 79 percent for 1W[c]).

Construction

Big Game

Segment 1W would pass through habitats used by various big game species throughout the year. The total amount of winter range that would be impacted along the Preferred/Proposed Route would be 460 acres for 1W(a) and 557 acres for 1W(c). Of those acres, 101 along 1W(a) and 86 along 1W(c) are federal. Alternative 1W(a)-B would impact 258 acres of winter range, 110 acres more than the comparison portion of the Preferred/Proposed Route. There is no parturition habitat mapped for any big game species along this segment (Table 3.10-6), and no big game range on NFS lands would be affected.

Table 3.10-6. Big Game Designated Winter Range Impacted by Segments 1W(a) and 1W(c) Preferred/Proposed Routes and Alternative 1W(a)-B During Construction (acres; and the number of acres on federally managed land, if any)

| Segment or Alternative | Length (miles) | Mule Deer | Pronghorn | Elk | Total ^{1/} |
|--|----------------|-----------|-----------|---------|---------------------|
| Preferred/Proposed – 1W(a) Total Length | 73.8 | 441 (82) | 295 (73) | 63 (26) | 460 (101) |
| Preferred/Proposed – Comparison Portion for Alt. 1W(a)-B | 16.5 | 148 | 135 | – | 148 |
| Alternative 1W(a)-B | 20.9 | 249 (<1) | 234 (<1) | – | 258 (<1) |
| Preferred/Proposed – 1W(c) Total Length | 73.6 | 530 (67) | 386 (60) | 67 (7) | 557 (86) |

1/ Totals given have taken any overlap among winter range for different species into account so that the total number of acres impacted is reported; therefore, the total may not be the same as the sum of numbers in the row. Acreages are rounded to nearest whole acre; therefore, columns/rows may not sum exactly.

Raptors

The numbers of currently documented raptor nest locations by species within 1 mile of the Preferred/Proposed Route of Segments 1W(a) and 1W(c) are shown below (Table 3.10-7). Of the nests on federally managed land shown in Table 3.10-7, the two goshawk nests are on NFS lands. Surveys for northern goshawks on Cache NF during 2010 found no territorial goshawks or active goshawk nests (Tetra Tech 2010d). The Medicine Bow Forest Plan has standards regarding the amount of vegetation that can be removed in active northern goshawk territories and about characteristics and size of post-fledging area that must be maintained within active territories. The Project as currently proposed would not meet these standards. Within the Medicine Bow-Routt NFs, the Preferred/Proposed Route of Segment 1W(a) would impact 11 acres within 1 mile of northern goshawk nests, and the Preferred/Proposed Route of Segment 1W(c) would impact 8 acres. Therefore, a plan amendment would be needed in order to develop the Project (see Appendix F-2). If the amendment occurs, this could increase impacts to goshawks by degrading their habitat. However, timing restrictions for active goshawk nests would still be adhered to (see Section 3.11.2.2, Forest Service Management Indicator Species for more details).

Table 3.10-7. Comparison of Raptor Nests within 1 mile of Segment 1W(a) and 1W(c) Preferred/Proposed Routes and Alternative 1W(a)-B (and the number on federally managed land, if any)

| Segment or Alternative | Total Nests | Number of Nests (number on federally managed land) | | | | | | | | |
|--|-------------|--|------------|--------------|------------------|--------------|------------------|------------------|----------------|-----------------|
| | | American Kestrel | Bald Eagle | Common Raven | Ferruginous Hawk | Golden Eagle | Great Horned Owl | Northern Goshawk | Prairie Falcon | Red-tailed Hawk |
| Preferred/Proposed – 1W(a) Total Length | 34 (17) | 1 | 1 | 3 | 14 (10) | 8 (5) | – | 1 (1) | 2 (1) | 4 |
| Preferred/Proposed – Comparison Portion for Alt. 1W(a)-B | 8 | – | 1 | – | – | 3 | – | – | – | 4 |
| Alternative 1W(a)-B | 2 | – | – | – | – | 2 | – | – | – | – |
| Preferred/Proposed – 1W(c) Total Length | 29 (12) | 1 | 1 | 4 | 14 (11) | 2 | 1 | 1 (1) | 2 (1) | 3 |

Fish

There would be a total of nine stream crossings along the two components of Segment 1W. Of the riparian vegetation cleared that is on federally managed land, the trace amount along the Preferred/Proposed Route for Segment 1W(a) is on NFS land. Table 3.10-8 compares the Preferred/Proposed Route and Route Alternatives along Segment 1W in regard to construction impacts to fish resources.

Table 3.10-8. Comparison of Stream Crossings (and the number on federally managed land, if any) and Acres of Riparian Clearing During Construction for Preferred/Proposed Segments 1W(a) and 1W(c) and Alternative 1W(a)-B (and the amount on federally managed land, if any)

| Segment or Alternative | Number of Stream Crossings | Acres of Riparian Habitat Cleared ^{1/} |
|--|----------------------------|---|
| Preferred/Proposed – 1W(a) Total Length | 3 (1) | 5 (<1) |
| Preferred/Proposed – Comparison Portion for Alt. 1W(a)-B | – | 1 |
| Alternative 1W(a)-B | – | <1 |
| Preferred/Proposed – 1W(c) Total Length | 6 (1) | 6 (<1) |

1/ Acreages are rounded to nearest whole acre.

Operations

Habitat Fragmentation

Table 3.10-9 presents the habitat fragmentation in Segment 1W.

Table 3.10-9. Comparison of Habitat Fragmentation from Roads and Transmission Lines by Habitat Type for Segments 1W(a) and 1W(c) and Alternative 1W(a)-B

| Segment or Alternative | Forest/Woodlands | | Shrublands | | Grasslands | | Riparian/Wetland | | Agriculture/Disturbed | |
|--|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|
| | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} |
| Preferred/Proposed – 1W(a) Total Length | 314 | 51 | 37 | 116 | 73 | 254 | 14.5 | 13 | 19 | 17 |
| Preferred/Proposed – Comparison Portion for Alt. 1W(a)-B | 168 | 13 | 33 | 42 | 34 | 109 | 12.4 | 11 | 20 | 17 |
| Alt. 1W(a)-B | 293 | 13 | 22 | 45 | 34 | 102 | 7.2 | 14 | 21 | 17 |
| Preferred/Proposed – 1W(c) Total Length | 320 | 51 | 38 | 114 | 75 | 247 | 12.2 | 13 | 21 | 17 |

1/ The difference between average patch size prior to and following construction.

2/ The number of additional fragments created as a result of the Project.

Acreages are rounded to nearest whole acre with the exception of riparian/wetland acreages, which are rounded to the nearest 0.1 acre.

Big Game

An operations impact to big game in Segment 1W would be the presence of the transmission line facilities and access roads for the life of the Project as identified in Table 3.10-10. Along Segment 1W(a), there would be 107 acres of mule deer winter range, 73 acres of pronghorn winter range, and 15 acres of elk winter range affected by the Preferred/Proposed Route during operations. Along Segment 1W(c), there would be 74 acres of mule deer winter range, 58 acres of pronghorn winter range, and 8 acres of elk winter range affected by the Preferred/Proposed Route. Due to overlap of winter ranges among these three species, the total amount of winter range that would be impacted by the

Preferred/Proposed Route is 110 acres by 1W(a) and 78 acres by 1W(c). Of those acres, 22 acres along the Preferred/Proposed Route for 1W(a) and 12 acres along 1W(c) are federally administered, none by NFS.

Table 3.10-10. Acres of Big Game Designated Winter Range Affected by Project Operations in the Preferred/Proposed Routes of Segments 1W(a) and 1W(c) and Alternative 1W(a)-B (and the amount on federally managed land, if any)

| Segment or Alternative | Mule Deer | Pronghorn | Elk | Total ^{1/} |
|--|-----------------------|-----------------------|--------|----------------------------|
| Preferred/Proposed – 1W(a) Total Length | 107 (19) | 73 (15) | 15 (6) | 110 (22) |
| Preferred/Proposed – Comparison Portion for Alt. 1W(a)-B | 27 | 26 | – | 27 |
| Alternative 1W(a)-B | 40 (t ^{2/}) | 38 (t ^{2/}) | – | 42 (t^{2/}) |
| Preferred/Proposed – 1W(c) Total Length | 74 (9) | 58 (9) | 8 (2) | 78 (12) |

1/ Totals given have taken any overlap among winter range for different species into account so that the total number of acres impacted is reported; therefore, the total may not be the same as the sum of numbers in the row.

2/ t = a trace amount (less than 0.1 acre)

Acres are rounded to nearest whole acre; therefore, columns/rows may not sum exactly.

Conclusions

Habitat Fragmentation

Segments 1W(a) and 1W(c) would cause fragmentation of all five habitat types examined in this analysis. Along 1W(a), the biggest reduction in average patch size would be in forest/woodlands, with a reduction of 314 acres, and the greatest increase in number of patches would be in grasslands, with 254 patches. On 1W(c), the biggest reduction in average patch size would also be in forest/woodlands, with a decrease of 320 acres, and the greatest number of new patches created would be in grasslands, with 247. Selection of Alternative 1W(a)-B would have a roughly similar effect on fragmentation of the various habitat types as the comparison portion of the Preferred/Proposed Route 1W(a) with the exception of forested areas, which would experience a substantial reduction in the average patch size in forested/woodland areas if this alternative is selected.

Big Game

The selection of Alternative 1W(a)-B would affect more designated mule deer and pronghorn winter range during both construction and operations than the comparison portion of the Preferred/Proposed Route. It would have no effect on the amount of elk winter range impacted. In respect to big game designated winter range along Segment 1W(a), the Preferred/Proposed Route would have less total effect than Alternative 1W(a)-B.

Raptors

The selection of Alternative 1W(a)-B would avoid one bald eagle nest, one golden eagle nest, and four red-tailed hawk nests that would be impacted by the comparison portion of the Preferred/Proposed Route; therefore, the selection of this alternative would impact fewer nesting raptors.

Fish

The selection of Alternative 1W(a)-B would decrease the amount of riparian vegetation that would be removed compared to the comparison portion of the Preferred/Proposed

Route by 1 acre, making that alternative slightly preferable to the Preferred/Proposed Route for 1W(a). The number of stream crossings would remain the same regardless of whether Alternative 1W(a)-B is selected.

Segment 2

The preferred route in Segment 2 is as follows:

| Preferred Route | Agency |
|-----------------------------|--------------------------|
| Proposed Route (Figure A-3) | BLM and State of Wyoming |

Segment 2 consists of one single-circuit 500-kV transmission line between the proposed Aeolus Substation and the location of the originally planned Creston Substation near Wamsutter, Wyoming (a new substation at Creston is no longer needed due to changes in anticipated demand for oil and gas field electricity). The Preferred/Proposed Route has been revised to incorporate Alternative 2C, as analyzed in the Draft EIS. Segment 2 would be approximately 91.9 miles long. Alternative 2A is being considered by the BLM because this alternative route is within the WWE corridor. Alternative 2B was initially the Proponents’ Proposed Route before they responded to local suggestions and relocated the Proposed Route farther to the south. Figure A-3 in Appendix A shows the location of the Segment 2 routes. Segment 2 lies on mostly flat topography, crossing the Continental Divide. The most common habitat type along the Preferred/Proposed Route is shrubland (85 percent of the total length).

Construction

Big Game

The Preferred/Proposed Route of Segment 2 would impact 1,646 acres of winter range for pronghorn, 1,458 acres for mule deer, 23 acres for elk, and 58 acres for moose. Because these habitat designations partially overlap, the Preferred/Proposed Route centerline would actually impact 1,780 acres of winter range, 719 of which are federally managed lands. Neither the Preferred/Proposed Route nor the Route Alternatives pass through mapped elk parturition habitat. Table 3.10-11 compares Segment 2 against Alternatives 2A and 2B in regard to impacts on big game winter range.

Table 3.10-11. Comparison of Designated Winter Range Impacted by the Segment 2 Preferred/Proposed Route and Alternatives During Construction (acres; and the amount on federally managed land, if any)

| Segment or Alternative | Length (miles) | Mule Deer | Pronghorn | Elk | Moose | Total ^{1/} |
|---|----------------|-------------|-------------|---------|---------|---------------------|
| Preferred/Proposed – Total Length | 91.9 | 1,458 (555) | 1,646 (660) | 23 (19) | 58 (40) | 1,780 (719) |
| Preferred/Proposed – Comparison Portion for Alt. 2A | 16.8 | 217 (64) | 309 (110) | 20 (16) | 58 (40) | 309 (110) |
| Alternative 2A | 16.0 | 204 (47) | 355 (130) | 20 (16) | 24 (18) | 355 (130) |
| Preferred/Proposed – Comparison Portion for Alt. 2B | 12.5 | 176 (57) | 238 (98) | 20 (16) | 58 (40) | 238 (98) |
| Alternative 2B | 12.2 | 117 (22) | 209 (65) | 20 (16) | 24 (18) | 209 (65) |

1/ Totals given have taken any overlap among winter range for different species into account so that the total number of acres impacted is reported; therefore, the total may not be the same as the sum of numbers in the row.

2/ t = a trace amount (less than 0.1 acre)

Acreages are rounded to nearest whole acre; therefore, columns/rows may not sum exactly.

Raptors

The Segment 2 proposed centerline would pass within 1 mile of the currently documented locations of 5 American kestrel nests, 5 burrowing owl nests, 5 common raven nests, 105 ferruginous hawk nests, 37 golden eagle nests, 2 great horned owl nests, 4 northern harrier nests, 7 prairie falcon nests, one short-eared owl nest, 17 red-tailed hawk nests, and 2 Swainson’s hawk nests. Table 3.10-12 compares the Preferred/Proposed Route to Alternatives 2A and 2B with regards to proximity to raptor nests.

Table 3.10-12. Comparison of Raptor Nests within 1 Mile of the Segment 2 Preferred/Proposed Route and Alternatives (and the number on federally managed land, if any)

| Segment or Alternative | Number of Nests (number on federally managed land) | | | | | | | | | | | | |
|--|--|------------------|------------|---------------|--------------|------------------|--------------|------------------|------------------|----------------|-----------------|-----------------|-----------------|
| | Total Nests | American Kestrel | Bald Eagle | Burrowing Owl | Common Raven | Ferruginous Hawk | Golden Eagle | Great Horned Owl | Northern Harrier | Prairie Falcon | Red-tailed Hawk | Short-eared Owl | Swainson’s Hawk |
| Preferred/Proposed – Total Length | 190 (64) | 5 (3) | – | 5 (2) | 5 (1) | 105 (35) | 37 (10) | 2 | 4 (1) | 7 (2) | 17 (8) | 1 (1) | 2 (1) |
| Preferred/Proposed – Comparison Portion for Alternative 2A | 34 (14) | 1 (1) | – | – | – | 19 (9) | 10 (2) | 1 | – | – | 3 (2) | – | – |
| Alternative 2A | 10 (1) | 1 (1) | 2 | – | – | 2 | 3 | – | – | – | 2 | – | – |
| Preferred/Proposed – Comparison Portion for Alternative 2B | 31 (13) | – | – | – | – | 19 (9) | 8 (2) | 1 | – | – | 3 (2) | – | – |
| Alternative 2B | 22 (5) | – | 2 | – | – | 10 (3) | 7 (1) | – | – | – | 3 (1) | – | – |

Fish

The Preferred/Proposed Route of Segment 2 would include one stream crossing. Neither alternative or its comparison portion of the Preferred/Proposed Route would cross any streams. Riparian ROW clearing along the Preferred/Proposed Route would impact 5 acres during construction, 1 acre of which would be kept clear during operations. Table 3.10-13 compares the Segment 2 Preferred/Proposed Route with Alternatives 2A and 2B in regard to construction impacts to fish resources.

Table 3.10-13. Comparison of Acres of Permanent Riparian Clearing for the Segment 2 Preferred/Proposed Route and Alternatives (and the amount on federally managed land, if any)

| Segment or Alternative | Number of Stream Crossings | Acres of Riparian Habitat Cleared |
|---|----------------------------|-----------------------------------|
| Preferred/Proposed – Total Length | 1 | 5 (2) |
| Preferred/Proposed – Comparison Portion for Alt. 2A | – | <1 |
| Alternative 2A | – | 9 (1) |
| Preferred/Proposed – Comparison Portion for Alt. 2B | – | <1 |
| Alternative 2B | – | 8 |

Acres are rounded to nearest whole acre.

Operations

Habitat Fragmentation

Table 3.10-14 presents the comparison portion of Segment 2 with Alternatives 2A and 2B for habitat fragmentation from proposed roads and the transmission line.

Table 3.10-14. Comparison of Habitat Fragmentation from Roads and Transmission Lines by Habitat Type for the Segment 2 Preferred/Proposed Route and Alternatives (no value indicates that the habitat type is not crossed)

| Segment or Alternative | Forest/ Woodlands | | Shrublands | | Grasslands | | Riparian/ Wetland | | Agriculture/ Disturbed | |
|---|--|--|--|--|--|--|--|--|--|--|
| | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} |
| Preferred/Proposed – Total Length | - | - | 70 | 276 | 77 | 33 | 9.1 | 8 | - | - |
| Preferred/Proposed – Comparison Portion for Alt. 2A | - | - | 76 | 129 | - | - | 7.0 | 6 | - | - |
| Alternative 2A | - | - | 70 | 129 | - | - | 6.8 | 6 | - | - |
| Preferred/Proposed – Comparison Portion for Alt. 2B | - | - | 61 | 108 | - | - | 7.0 | 6 | - | - |
| Alternative 2B | - | - | 59 | 108 | - | - | 7.3 | 6 | - | - |

1/ The difference between average patch size prior to and following construction.

2/ The number of additional fragments created as a result of the Project.

Acres are rounded to nearest whole acre with the exception of riparian/wetland acreages, which are rounded to the nearest 0.1 acre.

Big Game

There would be operations impacts to winter range for mule deer, pronghorn, elk, and moose by the Preferred/Proposed Route for Segment 2. Due to overlap of winter range among these four species, the total amount of winter range that would be impacted by the Preferred/Proposed Route is 245 acres, 79 federally managed. Table 3.10-15 compares Segment 2 against Alternatives 2A and 2B in regard to impacts on big game winter range.

Table 3.10-15. Acres of Big Game Designated Winter Range Affected by Project Operations of the Segment 2 Preferred/Proposed Route and Alternatives (and the number of acres on federally managed land, if any)

| Segment or Alternative | Mule Deer | Pronghorn | Elk | Moose | Total ^{1/} |
|---|-----------|-----------|-----------------|-------|---------------------|
| Preferred/Proposed – Total Length | 208 (62) | 228 (72) | 1 (1) | 3 (2) | 245 (79) |
| Proposed – Comparison Portion for Alt. 2A | 21 (6) | 28 (8) | t ^{2/} | 3 (2) | 28 (8) |
| Alternative 2A | 25 (7) | 40 (13) | t ^{2/} | 1 (1) | 40 (13) |
| Proposed – Comparison Portion for Alt. 2B | 17 (5) | 21 (6) | - | 3 (2) | 21 (6) |
| Alternative 2B | 10 (3) | 17 (6) | - | 1 (1) | 17 (6) |

1/ Totals given have taken any overlap among winter range for different species into account so that the total number of acres impacted is reported; therefore, the total may not be the same as the sum of numbers in the row.

2/ t = a trace amount (less than 0.1 acre)

Conclusions

Habitat Fragmentation

The Preferred/Proposed Route would increase fragmentation over current conditions in the shrubland, grassland, and riparian/wetland habitat types, decreasing the average remaining patch size and increasing the number of patches. Forest/woodlands and agriculture/disturbed habitat types would not be crossed by this segment. The selection of Alternative 2A or 2B would have similar effects on habitat fragmentation as the comparison portion of the Preferred/Proposed Route.

Big Game

Alternative 2B would decrease the total amount of designated big game winter range impacted during both construction and operations, and the amount impacted by species. Comparing Alternative 2A to the Preferred/Proposed Route yields mixed results; however, Alternative 2A would result in more total acres of winter range impacted during operations.

Raptors

Selection of either of the two Route Alternatives would result in fewer total raptor nests within a mile of the Project than the comparison portion of the Preferred/Proposed Route. Alternative 2A would pass within 1 mile of 23 fewer nests than the comparison portion of the Preferred/Proposed Route, while Alternative 2B would pass near 8 fewer nests; therefore, Alternative 2A would impact the fewest nesting raptors.

Fish

The number of stream crossings along Segment 2 would not be affected regardless of whether the Preferred/Proposed Route or either alternative is selected. Selection of either alternative would cause more riparian vegetation to be removed than the respective comparison portions of the Preferred/Proposed Route, making the Preferred/Proposed Route the choice that would have the least impact on fish.

Segment 3

The preferred route in Segment 3 is as follows:

| Preferred Route | Agency |
|---|--------------------------|
| Proposed Route, including 3A (Figure A-4) | BLM and State of Wyoming |

A single-circuit 500-kV line would link the former location of the Creston Substation, approximately 2.1 miles south of Wamsutter, Wyoming, to the proposed Anticline Substation near the existing Jim Bridger Power Plant. Segment 3 would be approximately 45.9 miles long. This segment also includes a 5.1-mile segment of 345 kV line to connect to the existing Jim Bridger Power Plant Substation (Segment 3A). There are no alternatives proposed along Segment 3. Figure A-4 in Appendix A shows the location of the Segment 3 routes. Segment 3 also lies along mostly flat land and crosses the Continental Divide again. The dominant habitat type along Segments 3 and 3A is shrubland (94 percent).

Construction

Big Game

Segment 3 would pass through habitats used by various big game species throughout the year. In addition, the Preferred/Proposed Route along Segment 3 would impact 893 acres of designated winter range for pronghorn. It would also impact 603 acres of mule deer winter range, all of which overlaps pronghorn range, resulting in a total of 893 acres of big game winter range impacted, 414 of which are federally managed lands, none administered by the NFS. There is no parturition habitat identified along Segment 3 for any big game species.

Raptors

Construction of Segments 3 and 3A would occur within 1 mile of two American kestrel nests (one on BLM-managed land), 2 burrowing owl nests (both on BLM-managed land), six common raven nests (1 on BLM-managed land), 18 ferruginous hawk nests (12 on BLM-managed land), 14 golden eagle nests (13 on BLM-managed land), 2 great horned owl nests (1 on BLM-managed land), 1 northern harrier nest (on BLM-managed land), 17 prairie falcon nests (11 on BLM-managed land), and 7 red-tailed hawk nests (3 on BLM-managed land) currently documented, for a total of 69 nests. On the Green River Management Area in the Rock Springs FO, permanent structures such as powerlines and roads are not allowed within 0.5 mile of active raptor nests; however, Segments 3 and/or 3A would lie within 0.5 mile of 37 known raptor nests within this management unit. However, the BLM has determined that no plan amendments would be required to meet this RMP requirement because this conflict can be resolved using the administrative process outlined in the Green River RMP (refer to Appendix 2 of the Green River RMP, "Mitigation Guidelines for Surface-Disturbing and Disruptive Activities"). The impacts of allowing the Project in this area would be increased disturbance to nesting raptors, potentially leading to disruption in feeding times and flushing of the adult from the nest, possibly resulting in loss of one or more young.

Fish

There are 10 stream crossings proposed for Segments 3 and 3A (7 of which are on federally managed land), and a total of 3 acres of riparian vegetation would be cleared for construction. Of these 3 acres, 1 is on federally managed land. During operations, less than 1 acre of riparian vegetation would remain cleared (Table D.9-2 in Appendix D).

Operations

Habitat Fragmentation

The only habitat type that would be fragmented by Segments 3 and 3A is shrublands. Segment 3 would cause the average patch size to decrease by 128 acres and create 87 new patches. Segment 3A would cause the average patch size to decrease by 119 acres, and create 20 new patches.

Big Game

Operations impacts to big game in Segment 3 would be limited to the presence of the transmission line facilities and access roads for the life of the Project. Approximately 125

acres of mule deer winter range and 152 acres of pronghorn winter range would be affected. Due to overlap of winter ranges between these two species, the total amount of winter range that would be impacted by the Preferred/Proposed Route is 152 acres. Of those, 51 acres consist of federally administered lands, none by the NFS.

Conclusions

Segment 3 has no proposed alternatives and therefore no further conclusions about impacts on this segment are necessary.

Segment 4

The preferred routes in Segment 4 are as follows:

| Preferred Route | Agency |
|---|---|
| Proposed Route (Figures A-5 and A-6) except within the Caribou-Targhee NF (see below) | BLM, State of Wyoming, and Lincoln County |
| Proposed Route within the NF incorporating Alternative 4G (Figure A-6) | Forest Service |

Segment 4 would link the proposed Anticline Substation and the existing Populus Substation near Downey, Idaho with a single-circuit 500-kV line. Its proposed length is approximately 197.6 miles. The Segment 4 BLM Preferred/Proposed Route was revised to follow Alternative 4A, as analyzed in the Draft EIS, based on public comments. This segment generally follows an existing transmission line corridor. Segment 4 has five Route Alternatives in the middle portion of its route; however the first 52 miles to the east and the last 61 miles to the west (in Idaho) do not have any route alternatives. The middle section of the Proposed Route, for which alternatives are presented, is approximately 85.2 miles long, and its alternatives vary from approximately 87.5 to 102.2 miles long. Alternatives 4B through 4E were proposed by the BLM Kemmerer FO (with input from various cooperating agencies), with the intent to avoid impacts to cultural resources to the extent practical. Alternative 4F was proposed by the Proponents to avoid impacts to cultural resources while still remaining north of the existing Bridger Lines. Alternative 4G was proposed by the Forest Service in order to avoid unstable soils identified along the Proposed Route during the 2012 soil assessment (it is located within Sections 1 and 2, Township 12 South, Range 41 East). Figures A-5 and A-6 in Appendix A show the location of the Segment 4 routes in Wyoming and Idaho, respectively. This segment is near Seedskaadee NWR, Cokeville Meadows NWR, and Bear Lake NWR, and also runs through the Caribou-Targhee NF. The dominant habitat type along the Preferred/Proposed Route is shrubland (74 percent).

Construction

Big Game

Segment 4 as proposed would pass through habitats used by various big game species throughout the year. Two officially designated habitat types would also be impacted, winter range and parturition areas. Because there is some overlap of designated winter range for the four different species, the total amount of designated winter range impacted by the Preferred/Proposed Route is 3,002 acres. Of these acres, 1,175 are on federally managed land, with 19 of those acres in the Caribou-Targhee NF. The Preferred/Proposed Route of Segment 4 would also impact 194 acres of elk parturition area, all along the comparison portion for the alternatives. Of these 194 acres, 134 are

on federally managed land, none administered by NFS. None of the alternatives would affect elk parturition habitat.

Table 3.10-16 compares Segment 4 against Alternatives 4B through 4F in regard to impacts on big game winter range.

Approximately 182 acres of forest would be within the ROW on the Caribou-Targhee NF. Approximately 13 acres of mature conifer forest within the ROW are on slopes greater than 40 percent (see discussion in Section 3.6 – Vegetation Communities). The Caribou Forest Plan does not permit ground-based logging equipment to be used on slopes greater than 40 percent; therefore, helicopters would be used to harvest these areas. The largest concentration of timber on slopes greater than 40 percent, approximately 7 acres, is in Section 1, Township 12 South, Range 41 East. Use of helicopters during construction could disturb wildlife; however, helicopter use would be restricted by the timing and seasonal restrictions outlined in Appendix I. As a result, helicopter use (along with any other Project-related activities) would not be allowed during the times described in Appendix I, thereby minimizing the risk of disturbance to wildlife during these sensitive periods.

Table 3.10-16. Comparison of Designated Winter Range Impacted by the Segment 4 Preferred/Proposed Route and Alternatives (acres; and the amount on federally managed land, if any)

| Segment or Alternative | Length (miles) | Mule Deer | Moose | Pronghorn | Elk | Total ^{1/} |
|---|----------------|-------------|-----------|-------------|-----------|----------------------|
| Preferred/Proposed – Total Length | 197.6 | 1,546 (378) | 519 (263) | 1,675 (815) | 756 (280) | 3,002 (1,175) |
| Preferred/Proposed – Comparison Portion for Alternatives 4B–F | 85.2 | 351 (154) | 518 (262) | 698 (393) | 409 (186) | 1,213 (636) |
| Alternative 4B | 100.2 | 867 (469) | 91 (<1) | 483 (149) | 788 (441) | 1,287 (619) |
| Alternative 4C | 101.6 | 876 (459) | 245 (79) | 476 (183) | 779 (419) | 1,277 (596) |
| Alternative 4D | 100.8 | 874 (476) | 91 (<1) | 485 (150) | 785 (435) | 1,295 (626) |
| Alternative 4E | 102.2 | 868 (455) | 245 (79) | 478 (184) | 759 (401) | 1,269 (592) |
| Alternative 4F | 87.5 | 296 (68) | 488 (303) | 567 (329) | 255 (92) | 1,223 (668) |

^{1/} Totals given have taken any overlap among winter range for different species into account so that the total number of acres impacted is reported; therefore, the total may not be the same as the sum of numbers in the row.

Acres are rounded to nearest whole acre; therefore, columns/rows may not sum exactly.

Raptors

The Preferred/Proposed Route of Segment 4 would pass within 1 mile of 122 currently documented raptor nest locations: 6 American kestrel, 3 bald eagle, 18 common raven, 16 ferruginous hawk, 14 golden eagle, 7 great horned owl, 1 long-eared owl, 4 northern goshawk, 1 osprey, 2 northern harrier, 15 prairie falcon, 33 red-tailed hawk, and 2 Swainson's hawk. All 4 of the northern goshawk nests are on NFS land. Table 3.10-17 compares Segment 4 against Alternatives 4B through 4F in regard to the number of raptor nests within a mile.

Surveys for northern goshawks and flammulated owls on the Caribou-Targhee NF during 2010 found no territorial birds or active nests (Tetra Tech 2010e). The Caribou NF has standards and guidelines dealing with disturbance within goshawk territories, including a maximum size of created openings of 40 acres within post-fledging family areas and

foraging areas, as well as a “no clearing” restriction in the nesting area (Forest Service 2003a). Both the Proposed Route and Alternative 4G would impact goshawk habitat on the Caribou NF (see Section 3.11 – Special Status Wildlife and Fish Species for more detail), the Project would not be in compliance with the Caribou Forest Plan, and a plan amendment would be needed. The impacts of this amendment could include decreased foraging efficiency of goshawks within the affected territories (see Section 3.11 – Special Status Wildlife and Fish Species for more details on goshawks, as well as the amount of goshawk territories that would be impacted). Roads within these areas would be routed to avoid these areas whenever possible, and timing restrictions for active nests would be adhered to. On the Green River Management Area in the Rock Springs FO, permanent structures such as powerlines and roads are not allowed within 0.5 mile of active raptor nests; however, the Preferred/Proposed Route of Segment 4, as well as all of the Route Alternatives, would lie within 0.5 mile of 48 previously documented raptor nest locations within the Rock Springs FO. The BLM has determined that no plan amendments would be required to meet this RMP requirement because this conflict can be resolved using the administrative process outlined in the Green River RMP (refer to Appendix 2 of the Green River RMP, “Mitigation Guidelines for Surface-Disturbing and Disruptive Activities”).

Table 3.10-17. Comparison of Raptor Nests within 1 Mile of the Preferred/Proposed Route and Route Alternatives, Segment 4 Preferred/Proposed Route and Alternatives (and the Number on Federal Land, if any)

| Segment or Alternative | Total Nests | Number of Nests (number on federally managed land) | | | | | | | | | | | | | |
|---|-------------|--|------------|---------------|--------------|--------------------------------|--------------|------------------|----------------|------------------|------------------|--------|----------------|-----------------|-----------------|
| | | American Kestrel | Bald Eagle | Burrowing Owl | Common Raven | Ferruginous Hawk ^{1/} | Golden Eagle | Great Horned Owl | Long-eared Owl | Northern Goshawk | Northern Harrier | Osprey | Prairie Falcon | Red-tailed Hawk | Swainson's Hawk |
| Preferred/Proposed – Total Length | 122 (50) | 6 (1) | 3 | – | 18 (9) | 16 (8) | 14 (7) | 7 (2) | 1 (1) | 4 (4) | 2 (2) | 1 (1) | 15 (4) | 33 (11) | 2 |
| Preferred/Proposed – Comparison Portion for Alternatives 4B–F | 41 (21) | 1 | – | – | 6 (5) | 3 (2) | 8 (3) | 1 (1) | 1 (1) | – | – | 1 (1) | 1 | 17 (8) | 2 |
| Alternative 4B | 22 (12) | 1 | – | 1 (1) | 2 (2) | – | 6 (1) | 1 (1) | – | – | – | – | 2 | 8 (7) | 1 |
| Alternative 4C | 22 (12) | 1 | – | 1 (1) | 2 (2) | – | 6 (1) | 1 (1) | – | – | – | – | 2 | 8 (7) | 1 |
| Alternative 4D | 22 (12) | 1 | – | 1 (1) | 2 (2) | – | 6 (1) | 1 (1) | – | – | – | – | 2 | 8 (7) | 1 |
| Alternative 4E | 22 (12) | 1 | – | 1 (1) | 2 (2) | – | 6 (1) | 1 (1) | – | – | – | – | 2 | 8 (7) | 1 |
| Alternative 4F | 32 (17) | 1 | – | – | 5 (4) | 3 (2) | 7 (3) | 1 (1) | 1 (1) | – | – | – | 1 | 12 (6) | 1 |

^{1/} Numbers for Alternatives 4B through 4E are suspected ferruginous hawk nests.

Fish

A total of 59 stream crossings are proposed for Segment 4. Of the crossings that would be on federally managed land, 13 along the Preferred/Proposed Route are on NFS lands. Construction would impact 39 acres of riparian areas along the Preferred/Proposed Route, of which 7 acres would be kept clear during operations. Of the riparian vegetation on federally managed land that would be cleared, a trace amount (less than 0.1 acre) along the Preferred/Proposed Route is on NFS land. Table 3.10-18 compares the Preferred/Proposed Route of Segment 4 with Alternatives 4B through 4F with regard to construction impacts to fish resources.

Table 3.10-18. Comparison of Stream Crossings (and the number on federally managed land, if any) and Acres of Riparian Clearing during Construction for the Segment 4 Preferred/Proposed Route and Alternatives (and the amount on federally managed land, if any)

| Segment or Alternative | Number of Stream Crossings | Acres of Riparian Habitat Cleared ^{1/} |
|--|----------------------------|---|
| Preferred/Proposed – Total Length | 59 (29) | 39 (10) |
| Preferred/Proposed – Comparison Portion for Alts. 4B–F | 25 (11) | 27 (7) |
| Alternative 4B | 13 | 22 (2) |
| Alternative 4C | 11 | 21 (1) |
| Alternative 4D | 13 | 22 (1) |
| Alternative 4E | 11 | 21 (1) |
| Alternative 4F | 44 (32) | 26 (8) |

1/ Acreages are rounded to nearest whole acre.

Operations

Habitat Fragmentation

Table 3.10-19 presents the comparison portion of Segment 4 with Alternatives 4B through 4F for habitat fragmentation from proposed roads and the transmission line.

Table 3.10-19. Comparison of Habitat Fragmentation from Roads and Transmission Lines by Habitat Type for the Segment 4 Preferred/Proposed Route and Alternatives (no value indicates that the habitat type is not crossed)

| Segment or Alternative | Forest/Woodlands | | Shrublands | | Grasslands | | Riparian/Wetland | | Agriculture/Disturbed | |
|--|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|
| | Reduction in Average patch size ^{1/} (acre) | Change in Patch Count ^{2/} | Reduction in Average patch size ^{1/} (acre) | Change in Patch Count ^{2/} | Reduction in Average patch size ^{1/} (acre) | Change in Patch Count ^{2/} | Reduction in Average patch size ^{1/} (acre) | Change in Patch Count ^{2/} | Reduction in Average patch size ^{1/} (acre) | Change in Patch Count ^{2/} |
| Preferred/Proposed – Total Length | 6 | 93 | 40 | 467 | 1 | 33 | 3.2 | 44 | 17 | 80 |
| Preferred/Proposed – Comparison Portion for Alts. 4B–F | 35 | 14 | 80 | 250 | – | 2 | 16.0 | 14 | 20 | 31 |
| Alternative 4B | – | – | 103 | 320 | – | 2 | 13.0 | 21 | 21 | 22 |
| Alternative 4C | – | – | 101 | 328 | – | 2 | 14.6 | 23 | 28 | 38 |
| Alternative 4D | – | – | 102 | 320 | – | 2 | 13.0 | 21 | 21 | 22 |
| Alternative 4E | – | – | 101 | 328 | – | 2 | 14.6 | 23 | 28 | 38 |
| Alternative 4F | 57 | 15 | 71 | 223 | – | 2 | 11.9 | 11 | 18 | 26 |

1/ The difference between average patch size prior to and following construction.

2/ The number of additional fragments created as a result of the Project.

Acreages are rounded to nearest whole acre with the exception of riparian/wetland acreages, which are rounded to the nearest 0.1 acre.

Big Game

There would be operations occupancy along Segment 4 on winter ranges of mule deer, pronghorn, moose, and elk. Because there is some overlap among designated winter

range for the four different species, the total number of acres that would be impacted by the Preferred/Proposed Route during operations is 403. Operations occupancy of elk parturition range would be 32 acres along the Preferred/Proposed Route (all along the comparison portion for the Route Alternatives, 22 acres of which is federally owned, 3 administered by the NFS), and 41 acres along Alternative 4F (31 acres of which is federally owned).

Table 3.10-20 compares Segment 4 against Alternatives 4B through 4F in regard to impacts on big game winter range.

The Kemmerer RMP does not allow an average of more than 2 miles of open road per square mile on big game winter range. New roads that would be constructed for the Project would be considered “closed,” because they would be closed to the public and revegetated following construction. Therefore, the Project is not expected to violate this requirement.

Table 3.10-20. Acres of Big Game Designated Winter Range Affected by Operations, Segment 4 Preferred/Proposed Route and Alternatives (and the amount on federally managed land, if any)

| Segment or Alternative | Mule Deer | Pronghorn | Moose | Elk | Total ^{1/} |
|--|-----------|-----------|----------------------|----------|---------------------|
| Preferred/Proposed – Total Length | 241 (49) | 238 (89) | 72 (41) | 104 (42) | 403 (139) |
| Preferred/Proposed – Comparison Portion for Alts. 4B–F | 50 (23) | 81 (47) | 72 (41) | 59 (30) | 153 (84) |
| Alternative 4B | 113 (59) | 59 (16) | 9 (t ^{2/}) | 96 (54) | 162 (75) |
| Alternative 4C | 106 (51) | 60 (24) | 28 (12) | 89 (46) | 154 (67) |
| Alternative 4D | 119 (65) | 59 (16) | 9 (t ^{2/}) | 102 (59) | 169 (81) |
| Alternative 4E | 110 (56) | 60 (24) | 28 (12) | 91 (49) | 159 (72) |
| Alternative 4F | 35 (9) | 64 (37) | 69 (45) | 34 (17) | 151 (87) |

1/ Totals given have taken any overlap among winter range for different species into account so that the total number of acres impacted is reported; therefore, the total may not be the same as the sum of numbers in the row.

2/ t = a trace amount (less than 0.1 acre)

Acres are rounded to nearest whole acre; therefore, columns/rows may not sum exactly.

Where Segment 4 crosses the Caribou-Targhee NF, the effects on road density from the Project have been calculated. Table 3.10-21 shows existing road densities on NFS land and densities of roads that would exist during Project operations, by fifth-field watershed. In the Caribou Forest Plan, roads have been rated for their risk to wildlife; all roads that the Project crosses are designated as low risk for northern goshawk, big game, and overall wildlife, except for one road that does show a risk to goshawk (Forest Service 2005). This makes it likely that Project roads in the same areas that would be revegetated following construction would also present a low risk to wildlife.

Table 3.10-21. Road Densities along the Preferred/Proposed Route of Segment 4 on NFS Land before and after Project Implementation (miles per square mile)

| Fifth-field watershed | Existing | | With Project | | |
|------------------------|--------------------|-------------------|-------------------|--------------------|---------------------------------|
| | Total Road Density | Open Road Density | New Project Roads | Total Road Density | Open Road Density ^{1/} |
| Mill Creek-Ovid Creek | 1.8 | 1.1 | 0.1 | 1.9 | 1.1 |
| Trout Creek-Bear River | 1.4 | 0.8 | 0.1 | 1.5 | 0.8 |

1/ All Project roads are considered “closed,” as they would be revegetated and closed to the public. Mileages are rounded to tenths of a mile.

Conclusions

Habitat Fragmentation

The Preferred/Proposed Route would result in increased fragmentation over current levels. It would have the greatest effect in shrublands. Of the five Route Alternatives, only 4F would have an effect on fragmentation of forest/woodlands, making the average size of remaining patches smaller, and creating one additional patch compared to the comparison portion of the Preferred/Proposed Route. Alternative 4F would fragment the shrublands habitat type less than the Preferred/Proposed Route, while Alternatives 4B through 4E would fragment this habitat type more than the Preferred/Proposed Route. Fragmentation of grasslands would be equal and minimal under the Preferred/Proposed Route or any of the Route Alternatives, with no change in average patch size and an increase in patches of only two. Riparian/wetland would be fragmented the least under Alternative 4F, followed by Alternatives 4B and 4D, and then Alternatives 4C and 4E. Agriculture/disturbed would also be fragmented least under Alternative 4F; Alternatives 4B through 4C would increase fragmentation of agriculture/disturbed areas compared to the comparison portion of the Preferred/Proposed Route. Alternative 4F would result in the least amount of fragmentation in shrublands, riparian/wetland, and agriculture/disturbed; however, it is the only alternative that would fragment forest/woodlands, which take longer to recover. Regarding habitat fragmentation along Segment 4, there is no clear choice that would have the most favorable effect overall among the five Route Alternatives or the Preferred/Proposed Route.

Big Game

For moose and pronghorn, selection of any of the alternatives would result in fewer acres of winter range impacted during operation. Alternative 4F would impact fewer acres of winter range than the Preferred/Proposed Route for all species, but it would impact more elk parturition range. Any of the alternatives to Segment 4 would increase the total amount of big game winter range impacted during construction. A comparison of the operations impacts by alternative, with all species pooled, shows only small differences among alternatives. Alternative 4D would impact the most winter range, with an increase over the Preferred/Proposed Route of 16 acres, while Alternative 4F would impact 2 fewer acres. With all types of designated big game ranges combined, the Preferred/Proposed Route would impact the fewest acres during construction, and Alternative 4F would impact the fewest during operation. Either one of these choices would have the least amount of impacts on big games.

Raptors

Selection of any of Alternatives 4B through 4F would decrease the number of raptor nests within 1 mile of the Project, potentially decreasing the number of nesting raptors that would be disturbed and experience other impacts compared to the Preferred/Proposed Route. Alternatives 4B through 4E would have the least impacts, being located within 1 mile of 21 raptor nests each, while Alternative 4F would be near 30 nests and the comparison portion of the Preferred/Proposed Route 38 nests. The selection of any of Alternatives 4B through 4E would have the least impact on raptors than Alternative 4F or the Preferred/Proposed Route. Alternatives 4B, 4C, 4D, and 4E would also all impact the same raptor species as each other.

Fish

All of the Route Alternatives except Alternative 4F would decrease the number of stream crossings compared to the Preferred/Proposed Route, and all alternatives would decrease the amount of riparian habitat cleared. Alternative 4F would result in the most streams crossed. The greatest reductions in impacts compared to the Preferred/Proposed Route would be under Alternatives 4C and 4E; therefore, either of these two alternatives would be the best choice in minimizing impacts to fish along Segment 4.

Caribou-Targhee National Forest Crossed by Two Segment 4 Alternatives

As discussed earlier, three National Forests would be crossed by various routes: the Medicine Bow-Routt NFs would be crossed by the Proposed Route along Segment 1W, and the Sawtooth NF would be crossed by Alternative 7K (i.e., only one route alternative would cross these two NFs). However, there are two route alternatives considered across the Caribou-Targhee NF (i.e., the Proposed Route and Alternative 4G). The Forest Service soils assessment, which was completed in 2012, identified steep slopes and potentially unstable soils along a portion of the Proposed Route that crosses the Caribou-Targhee NF (i.e., in Sections 1 and 2, Township 12 South, Range 41 East). The Forest Service therefore identified an alternative route that avoids these areas (referred to as Alternative 4G). Alternative 4G is 2.6 miles long compared to 2.3 miles for the comparison portion of the Proposed Route (Figure 2.4-3 in Chapter 2). The Forest Service's Preferred Route for the portion of Segment 4 within the Caribou-Targhee NF is the Proposed Route with the inclusion of Alternative 4G. The Forest Service's Preferred Route for the ROW on the Caribou-Targhee NF would be 9.4 miles long and impact a total of 356 acres of land (28 acres more than the comparison portion of the Proposed Route).

Selection of Alternative 4G would not have a differential effect on the amount of big game range impacted by the Project, compared to the Proposed Route, and would have similar effects to the level of habitat fragmentation compared to the Proposed Route (due to this alternative's close proximity to the Proposed Route). Table 3.10-22 lists the impacts to big game range by the portion of the Proposed Route located on the Caribou-Targhee NF, Alternative 4G, as well as the comparison portion of the Proposed Route.

Alternative 4G would route the Project closer to known goshawk nests, compared to the Proposed Route. This would result in impacts to both nesting as well as post-fledging goshawk habitat on the Caribou-Targhee NF. Section 3.11.2.2 contains a detailed assessment of the impacts that would occur to goshawks as a result of Alternative 4G compared to the Proposed Route.

Table 3.10-22. Acres of Big Game Designated Winter Range impacted on the Caribou-Targhee National Forest

| Segment or Alternative | Mule Deer | Pronghorn | Moose | Elk | Total ¹⁷ |
|--|-----------|-----------|-------|-----|---------------------|
| Construction Impacts | | | | | |
| Segment 4 Proposed – Portion on the Caribou-Targhee NF | 13 | – | – | 5 | 19 |
| Proposed – Comparison Portion for Alt 4G | 4 | – | – | – | 4 |
| Alternative 4G | 4 | – | – | – | 4 |
| Forest Service Preferred Segment 4 - Portion on the Caribou-Targhee NF | 13 | – | – | 5 | 19 |

Table 3.10-22. Acres of Big Game Designated Winter Range impacted on the Caribou-Targhee National Forest (continued)

| Segment or Alternative | Mule Deer | Pronghorn | Moose | Elk | Total ^{1/} |
|--|-----------|-----------|-------|-----|---------------------|
| Operational Impacts | | | | | |
| Segment 4 Proposed – Portion on the Caribou-Targhee NF | 2 | – | – | 1 | 3 |
| Proposed – Comparison Portion for Alt 4G | 1 | – | – | – | 1 |
| Alternative 4G | 1 | – | – | – | 1 |
| Forest Service Preferred Segment 4-Portion on the Caribou-Targhee NF | 2 | – | – | – | 3 |

1/ Totals given have taken any overlap among winter range for different species into account so that the total number of acres impacted is reported; therefore, the total may not be the same as the sum of numbers in the row. Acreages are rounded to nearest whole acre; therefore, columns/rows may not sum exactly.

Segment 5

The preferred routes in Segment 5 are as follows:

| Preferred Route | Agency |
|--|--------------|
| Proposed Route incorporating Alternatives 5B and 5E ^{1/} (Figure A-7) | BLM |
| Proposed Route incorporating Alternatives 5C and 5E (Figure A-7) | Power County |

1/ Assumes that Western Electricity Coordinating Council reliability issues associated with 5E are resolved.

Segment 5 would link the Populus and Borah Substations with a single-circuit 500-kV line that would be approximately 55.7 miles long. There are five Route Alternatives to portions of the Proposed Route in Segment 5. Alternatives 5A and 5B were proposed by the BLM to avoid crossing the Deep Creek Mountains. Alternative 5C, which crosses the Fort Hall Indian Reservation, was proposed as the preferred route by Power County; however, the Fort Hall Business Council has voted not to permit the Project across the Reservation. Alternative 5D was originally the Proponents' Proposed Route. Alternative 5E was proposed by Power County as an alternative approach to the Borah Substation. The BLM has identified a Preferred Route that includes portions of the Proposed Route with Alternatives 5B and 5E (with the assumption that reliability issues associated with Alternative 5E can be resolved). The Segment 5 Preferred Route is 73.3 miles long, compared to 55.7 miles for the Proposed Route. Figure A-7 in Appendix A shows the location of the Segment 5. Segment 5 would travel through more populated and mountainous country than the Wyoming segments, crossing the Bannock Range and Deep Creek Mountains and coming near the southern suburbs of Pocatello, Idaho. The dominant habitat type along the Proposed Route is shrubland (48 percent).

Construction

Big Game

The Segment 5 centerline would pass through habitats used by various big game species throughout the year. In addition, the Proposed Route for Segment 5 would impact 665 acres of mule deer winter range and about 1 acre of elk winter range. Of these impact acres, 141 are on federally managed land, none administered by the NFS. Table 3.10-23 compares Segment 5 against Alternatives 5A through 5E, as well as the BLM's Preferred Route, in regard to impacts on big game winter range.

Table 3.10-23. Comparison of Designated Winter Range Impacted by the Segment 5 Preferred Route, Proposed Route, and Alternatives (acres; and the amount on federally managed land, if any)

| Segment or Alternative | Total Miles | Mule Deer | Elk | Total ^{1/} |
|---|-------------|-----------|-----|---------------------|
| Preferred – Total Length | 73.3 | 906 (173) | – | 906 (173) |
| Proposed – Total Length | 55.7 | 665 (141) | 1 | 666 (141) |
| Proposed – Comparison Portion for Alt. 5A,B | 22.3 | 164 (52) | 1 | 165 (52) |
| Alternative 5A | 29.7 | 240 (67) | – | 240 (67) |
| Alternative 5B | 40.4 | 397 (93) | – | 397 (93) |
| Proposed – Comparison Portion for Alt. 5C | 32.9 | 459 (75) | 1 | 460 (75) |
| Alternative 5C | 26.0 | 129 | 153 | 200 |
| Proposed – Comparison Portion for Alt. 5D | 19.2 | 377 (47) | – | 377 (47) |
| Alternative 5D | 17.0 | 324 (2) | – | 324 (2) |
| Proposed – Comparison Portion for Alt. 5E | 5.8 | 70 (24) | – | 70 (24) |
| Alternative 5E | 5.3 | 78 (15) | – | 78 (15) |

1/ Totals given have taken any overlap among winter range for different species into account so that the total number of acres impacted is reported; therefore, the total may not be the same as the sum of numbers in the row. Acreages are rounded to nearest whole acre; therefore, columns/rows may not sum exactly.

Raptors

The Proposed Route for Segment 5 would pass within 1 mile of two currently documented bald eagle nests, one burrowing owl nest (on BLM-administered land), and one golden eagle nest (also on BLM-administered land; Table 3.10-24).

Table 3.10-24. Comparison of Raptor Nests within 1 Mile of the Preferred Route, Proposed Route, and Route Alternatives for Segment 5 (and the number on federally managed land, if any)

| Segment or Alternative | Total Nests | Number of Nests (number on federally managed land) | | |
|--|-------------|--|---------------|--------------|
| | | Bald Eagle | Burrowing Owl | Golden Eagle |
| Preferred – Total Length | 3 | - | 1 (1) | 2 (2) |
| Proposed – 5 Total Length | 4 | 2 | 1 (1) | 1 (1) |
| Proposed – Comparison Portion for Alternatives 5A, B | 1 | – | – | 1 (1) |
| Alternative 5A | 3 | – | – | 3 (1) |
| Alternative 5B | 2 | – | – | 2 (2) |
| Proposed – Comparison Portion for Alternative 5C | 1 | – | – | 1 (1) |
| Alternative 5C | – | – | – | – |
| Proposed – Comparison Portion for Alternative 5D | 3 | 2 | – | 1 (1) |
| Alternative 5D | 3 | 2 | – | 1 (1) |
| Proposed – Comparison Portion for Alternative 5E | 2 | 2 | – | – |
| Alternative 5E | – | – | – | – |

Fish

No stream crossings are planned for the Proposed Route of Segment 5. Riparian ROW clearing would impact 5 acres during construction, 1 acre of which would be kept clear during operations. Table 3.10-25 compares the Proposed Route of Segment 5 with Alternatives 5A through 5E, as well as the Preferred Route, in regard to construction impacts to fish

resources. None of the federally managed land from which riparian vegetation would be removed is administered by NFS.

Table 3.10-25. Comparison of Stream Crossings (and the number on federally managed land, if any) and Acres of Riparian Clearing During Construction for the Segment 5 Preferred Route, Proposed Route, and Alternatives (and the amount on federally managed land, if any)

| Segment or Alternative | Number of Stream Crossings | Acres of Riparian Habitat Cleared ^{1/} |
|---|----------------------------|---|
| Preferred – Total Length | 7 (4) | 6 (t ^{2/}) |
| Proposed – Total Length | – | 5 (t ^{2/}) |
| Proposed – Comparison Portion for Alternatives 5A,B | – | <1 |
| Alternative 5A | 8 (1) | 1 (t ^{2/}) |
| Alternative 5B | 7 (4) | 2 (<1) |
| Proposed – Comparison Portion for Alternative 5C | – | 3 |
| Alternative 5C | – | 3 (2) |
| Proposed – Comparison Portion for Alternative 5D | – | 4 (t ^{2/}) |
| Alternative 5D | – | 4 |
| Proposed – Comparison Portion for Alternative 5E | – | 1 (t ^{2/}) |
| Alternative 5E | – | <1 (t ^{2/}) |

1/ Acreages are rounded to nearest whole acre.

2/ “t” indicates only a trace amount (<0.1 acre) of impact.

Operations

Habitat Fragmentation

Table 3.10-26 presents the comparison portion of Segment 5 with Alternatives 5A through 5E, as well as the Preferred Route, with regard to habitat fragmentation from proposed roads and the transmission line.

Table 3.10-26. Comparison of Habitat Fragmentation from Roads and Transmission Lines by Habitat Type for the Segment 5 Preferred Route, Proposed Route, and Alternatives

| Segment or Alternative | Forest/Woodlands | | Shrublands | | Grasslands | | Riparian/Wetland | | Agriculture/Disturbed | |
|---|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|
| | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{1/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} |
| Preferred – Total Length | 4 | 155 | 22 | 415 | 2 | 131 | 0.4 | 12 | 30 | 174 |
| Proposed – Total Length | 7 | 127 | 19 | 363 | 1 | 110 | 0.2 | 5 | 33 | 192 |
| Proposed – Comparison Portion for Alternatives 5A,B | 9 | 102 | 33 | 245 | 2 | 54 | 0.2 | 3 | 62 | 93 |
| Alternative 5A | 12 | 189 | 38 | 339 | 4 | 90 | 0.6 | 11 | 70 | 118 |
| Alternative 5B | 7 | 195 | 48 | 468 | 3 | 104 | 0.5 | 11 | 80 | 166 |
| Proposed – Comparison Portion for Alternative 5C | 8 | 112 | 27 | 255 | 1 | 59 | 0.2 | 2 | 51 | 134 |
| Alternative 5C | 1 | 39 | 18 | 180 | 1 | 62 | 0.1 | 2 | 30 | 98 |

Table 3.10-26. Comparison of Habitat Fragmentation from Roads and Transmission Lines by Habitat Type for the Segment 5 Preferred Route, Proposed Route, and Alternatives (continued)

| Segment or Alternative | Forest/Woodlands | | Shrublands | | Grasslands | | Riparian/Wetland | | Agriculture/Disturbed | |
|--|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|
| | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{1/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} |
| Proposed – Comparison Portion for Alternative 5D | 13 | 68 | 16 | 135 | 1 | 37 | 0.2 | 2 | 40 | 84 |
| Alternative 5D | 14 | 67 | 15 | 130 | 1 | 38 | 0.1 | 2 | 44 | 78 |
| Proposed – Comparison Portion for Alternative 5E | 1 | 10 | 10 | 52 | 1 | 26 | 0.1 | 1 | 22 | 48 |
| Alternative 5E | 1 | 10 | 10 | 50 | 1 | 26 | 0.1 | 1 | 21 | 48 |

1/ The difference between average patch size prior to and following construction.

2/ The number of additional fragments created as a result of the Project.

Acreages are rounded to nearest whole acre, with the exception of riparian/wetland acreages which are rounded to the nearest 0.1 acre.

Big Game

Operations impacts along the Proposed Route for Segment 5 to mule deer winter range are estimated at 77 acres, and at less than 1 acre for elk winter range. Table 3.10-27 compares the Segment 5 Proposed Route against Alternatives 5A through 5E, as well as the Preferred Route, in regard to impacts on big game winter range.

Table 3.10-27. Acres of Big Game Designated Winter Range Affected by Operations, Segment 5 Preferred Route, Proposed Route, and Alternatives and the amount on federally managed land, if any)

| Segment or Alternative | Mule Deer | Elk | Total ^{1/} |
|--|-----------|-----|---------------------|
| Preferred – Total Length | 94 (19) | – | 94 (19) |
| Proposed – Total Length | 77 (16) | <1 | 78 (16) |
| Proposed – Comparison Portion for Alternative 5A,B | 22 (7) | <1 | 23 (7) |
| Alternative 5A | 28 (9) | – | 28 (9) |
| Alternative 5B | 38 (10) | – | 38 (10) |
| Proposed – Comparison Portion for Alternative 5C | 60 (10) | <1 | 60 (10) |
| Alternative 5C | 14 | – | 20 |
| Proposed – Comparison Portion for Alternative 5D | 43 (4) | – | 43 (4) |
| Alternative 5D | 30 (<1) | – | 30 (<1) |
| Proposed – Comparison Portion for Alternative 5E | 4 (1) | – | 4 (1) |
| Alternative 5E | 5 (1) | – | 5 (1) |

1/ Totals given have taken any overlap among winter range for different species into account so that the total number of acres impacted is reported; therefore, the total may not be the same as the sum of numbers in the row.

Acreages are rounded to nearest whole acre; therefore, columns/rows may not sum exactly.

Conclusion

Habitat Fragmentation

The Proposed Route would fragment all five habitat types, with the biggest decrease in average patch size occurring in agriculture/disturbed areas, and the biggest increase in number of patches occurring in shrublands. Alternative 5C would cause the least amount of fragmentation to forest/woodlands. Choosing Alternative 5C would minimize fragmentation to shrublands and agriculture/disturbed. Alternative 5A would cause the greatest amount of fragmentation to all five habitat types. Overall, Alternative 5C would cause the least amount of fragmentation. Selecting Alternatives 5D and 5E would have little effect on the amount of fragmentation that would occur, compared to the Proposed Route.

In general, the Preferred Route would have a greater impact to fragmentation than the Proposed Route, except for within agricultural areas, where it would reduce the level of fragmentation.

Big Game

The Proposed Route would impact mule deer winter range but would affect very little elk winter habitat. A wide range in the amount of potential effects to big game winter range is possible from the five Route Alternatives. Alternatives 5A and 5B would increase the amount of big game range impacted during construction and operation, compared to the Proposed Route. Alternative 5C would impact less mule deer winter range, but would greatly increase the amount of elk winter range during construction (but not operation). Alternative 5D would slightly decrease the amount of mule deer winter range impacted during construction and operation. When overlap of winter range of the various big game species is taken into account, Alternative 5C would result in the least total impacts during construction and operations compared to the Proposed Route and the other Route Alternatives, while Alternative 5B would have the greatest impacts.

The Preferred Route would have a greater impact to big game range than the Proposed Route.

Raptors

The bald eagle nests are within 1 mile of Alternative 5D and the comparison portion for Alternative 5D. They are also within 1 mile of the comparison portion for Alternative 5E, but not the comparison portion of Alternative 5E. Therefore, the selection of any of the Route Alternatives except 5D would avoid the two bald eagle nests and have the least impacts on nesting bald eagles. The burrowing owl nest is not within 1 mile of any of the Route Alternatives or comparison portions; therefore the selection of any one of the Route Alternatives would avoid this nest. Alternatives 5A and 5B would impact more golden eagle nests than the Proposed Route, Alternative 5C would impact one fewer golden eagle nest, and Alternatives 5D and 5E would not impact the number of golden eagle nests affected. Based on the number of raptor nests within 1 mile, Alternative 5E would impact the fewest raptors.

The Preferred Route would have fewer impacts to bald eagle nests than the Proposed Route, but no difference in impacts to burrowing owl and golden eagle nests.

Fish

Selection of Alternative 5E would result in the least impact to fish and their habitat. Alternatives 5A and 5B have eight and seven stream crossings proposed, respectively, while the Proposed Route has none; therefore, these alternatives would have the greatest potential impact on fish along Segment 5. Alternatives 5C and 5D would not increase or decrease the impacts on fish compared to the Proposed Route.

The Preferred Route would have a greater impact to fish and their habitats than the Proposed Route.

Segment 6

The BLM’s Preferred Route in Segment 6 is as follows:

| Preferred Route | Agency |
|---|--------|
| The proposal to upgrade the line voltage from 345-kV to 500-kV (Figure A-8) | BLM |

Segment 6 is an existing transmission line linking the Borah and Midpoint Substations; it is now operated at 345 kV but would be changed to operate at 500 kV. This segment has no Route Alternatives. Existing support structures would be used and impacts would be limited to within approximately 0.25 mile from each substation to allow for moving the entry point into the substation to the new 500-kV bay. Changes at the Borah and Midpoint Substations would allow Segment 6 to be operated at 500 kV. Figure A-8 in Appendix A shows the Preferred/Proposed Route for Segment 6.

Segment 6 would not involve any ground-disturbing activities outside the immediate vicinity (less than 0.5 mile) of the two substations it interconnects, Borah and Midpoint. It was built as a single-circuit 500-kV line but has been operated at 345 kV. Changes in the two substations would allow for it to be operated at 500 kV. This would involve some disturbance at these two locations. Modifying the Borah and Midpoint Substations would cross 0.3 mile of mule deer winter range, impacting 30 acres of this habitat designation during construction and 28 acres during operations, none of it on federally managed land. There are no known raptor nests within 1 mile of the proposed activities for Segment 6, and no stream crossings or riparian vegetation clearing are proposed during construction or operations. Table 3.10-28 shows the amount of fragmentation that would occur due to adjustments that would be made to change the voltage of the line.

Table 3.10-28. Comparison of Habitat Fragmentation from Roads and Transmission Lines by Habitat Type for Segment 6 (no value indicates that the habitat type is not crossed)

| Segment or Alternative | Forest/Woodlands | | Shrublands | | Grasslands | | Riparian/Wetland | | Agriculture/Disturbed | |
|-----------------------------------|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|
| | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} |
| Preferred/Proposed – Total Length | - | - | 2 | 21 | 4 | 28 | 0.1 | 1 | 17 | 44 |

Acreages are rounded to nearest whole acre except for wetland areas, which are rounded to nearest 0.1 acre.

Segment 7

The preferred routes in Segment 7 are as follows:

| Preferred Route | Agency |
|--|---------------------------|
| Proposed Route incorporating Alternatives 7B, 7C, 7D, and 7G (Figure A-9). The Proposed Route in the East Hills and Alternative 7G will be microsited to avoid Preliminary Priority Sage-grouse Habitat (PPH). | BLM |
| Alternative 7K (Figure A-9) | Power and Cassia Counties |

Segment 7 would link the Populus Substation and the proposed Cedar Hill Substation with a single-circuit 500-kV line that would be approximately 118.2 miles long. Several alternatives to the Proposed Route are being considered. Route Alternatives 7A and 7B have been proposed by the BLM to avoid crossing the Deep Creek Mountains. Alternatives 7C, 7D, 7E, 7F, and 7G were proposed by local landowners to avoid private agricultural lands. Alternative 7K (also called the Goose Creek Alternative) was identified during the public comment period as a shorter alternative to the Proposed Route than either 7I or 7J (refer to Chapter 2 of the Draft EIS for a description of these routes). The alignment for Alternative 7K was developed in cooperation with Cassia County. Alternatives 7H, 7I, and 7J, which were analyzed in the Draft EIS, are no longer under consideration. The BLM has identified a Preferred Route that includes portions of the Proposed Route with Alternatives 7B, 7C, 7D, and 7G. The Segment 7 Preferred Route is 130.2 miles long, compared to 118.2 miles for the Proposed Route. Figure A-9 in Appendix A shows the location of the Segment 7 routes. The dominant habitat type along the Proposed Route for Segment 7 is shrubland (40 percent), followed by agriculture (36 percent).

Construction

Big Game

Segment 7 would pass through habitats used by various big game species throughout the year. The Proposed Route for Segment 7 would impact 835 acres of winter range for mule deer along the Proposed Route, 215 of which are on federally managed land. Table 3.10-29 compares Segment 7 against Alternatives 7A through 7K, as well as the Preferred Route, in regard to impacts on big game winter range.

Table 3.10-29. Comparison of Big Game Designated Winter Range Impacted during Construction by the Segment 7 Preferred Route, Proposed Route, and Alternatives (acres; and the number of acres on federally managed land, if any)

| Segment or Alternative | Length (miles) | Bighorn Sheep | Mule Deer | Elk | Total^{1/} |
|--|-----------------------|----------------------|------------------|------------|---------------------------|
| Preferred Route – Total Length | 130.2 | – | 839 (234) | – | 839 (234) |
| Proposed – Total Length | 118.2 | – | 835 (215) | – | 835 (215) |
| Proposed – Comparison Portion for Alts. 7A,B | 35.1 | – | 288 (69) | – | 288 (69) |
| Alternative 7A | 37.7 | – | 176 (59) | – | 176 (59) |
| Alternative 7B | 46.2 | – | 226 (79) | – | 226 (79) |

Table 3.10-29. Comparison of Big Game Designated Winter Range Impacted during Construction by the Segment 7 Preferred Route, Proposed Route, and Alternatives (acres; and the number of acres on federally managed land, if any) (continued)

| Segment or Alternative | Length (miles) | Bighorn Sheep | Mule Deer | Elk | Total ^{1/} |
|--|----------------|---------------|-----------|-----|---------------------|
| Proposed – Comparison Portion for Alternative 7C | 20.1 | – | 64 | – | 64 |
| Alternative 7C | 20.3 | – | 112 (8) | – | 112 (8) |
| Proposed – Comparison portion for Alternative 7D | 6.2 | – | 4 | – | 40 |
| Alternative 7D | 6.8 | – | 4 | – | 40 |
| Proposed – Comparison Portion for Alternative 7E | 3.8 | – | 45 (6) | – | 45 (6) |
| Alternative 7E | 4.5 | – | 83 (28) | – | 83 (28) |
| Proposed – Comparison Portion for Alternative 7F | 10.5 | – | 172 (27) | – | 172 (27) |
| Alternative 7F | 10.8 | – | 206 (84) | – | 206 (84) |
| Proposed – Comparison Portion for Alternative 7G | 3.3 | – | 60 (45) | – | 60 (45) |
| Alternative 7G | 3.43 | – | 78 (46) | – | 78 (46) |
| Proposed – Comparison Portion for Alternative 7K | 118.2 | – | 834 (214) | – | 834 (214) |
| Alternative 7K | 148.1 | – | 963 (661) | – | 963 (661) |

1/ Totals given have taken any overlap among winter range for different species into account so that the total number of acres impacted is reported; therefore, the total may not be the same as the sum of numbers in the row. Acreages are rounded to nearest whole acre except for wetland areas, which are rounded to nearest 0.1 acre; therefore, columns/rows may not sum exactly.

Raptors

The Proposed Route for Segment 7 would pass within 1 mile of 14 currently documented nests: 3 of burrowing owls, 9 of ferruginous hawks, and 2 of golden eagles (Table 3.10-30). Alternative 7K would pass by the greatest number of nests. Of the golden eagle nests within 1 mile of Alternative 7K on federally managed land, 4 are on NFS land.

Table 3.10-30. Comparison of Raptor Nests within 1 mile of the Segment 7 Preferred Route, Proposed Route, and Alternatives (and the number on federally managed land, if any)

| Segment or Alternative | Total Nests | Number of Nests (number on federally managed land) | | | | | |
|---|-------------|--|------------------|--------------|------------------|-----------------|-----------------|
| | | Burrowing Owl | Ferruginous Hawk | Golden Eagle | Northern Goshawk | Red-tailed Hawk | Swainson's Hawk |
| Preferred– Total Length | 9 (3) | 1 (1) | 7 (2) | 1 | – | – | – |
| Proposed – Total Length | 14 (7) | 3 (3) | 9 (4) | 2 | – | – | – |
| Proposed – Comparison Portion for Alternatives 7A,B | – | – | – | – | – | – | – |
| Alternative 7A | – | – | – | – | – | – | – |
| Alternative 7B | – | – | – | – | – | – | – |
| Proposed – Comparison Portion for Alternative 7C | 4 (4) | 2 (2) | 2 (2) | – | – | – | – |
| Alternative 7C | – | – | – | – | – | – | – |
| Proposed – Comparison Portion for Alternative 7D | 2 (1) | 1 (1) | – | 1 | – | – | – |

Table 3.10-30. Comparison of Raptor Nests within 1 mile of the Segment 7 Preferred Route, Proposed Route, and Alternatives (and the number on federally managed land, if any) (continued)

| Segment or Alternative | Total Nests | Number of Nests (number on federally managed land) | | | | | |
|--|-------------|--|------------------|--------------|------------------|-----------------|-----------------|
| | | Burrowing Owl | Ferruginous Hawk | Golden Eagle | Northern Goshawk | Red-tailed Hawk | Swainson's Hawk |
| Alternative 7D | 1 (1) | 1 (1) | – | – | – | – | – |
| Proposed – Comparison Portion for Alternative 7E | 8 (2) | – | 7 (2) | 1 | – | – | – |
| Alternative 7E | 8 (2) | – | 7 (2) | 1 | – | – | – |
| Proposed – Comparison Portion for Alternative 7F | 8 (2) | – | 7 (2) | 1 | – | – | – |
| Alternative 7F | 8 (2) | – | 7 (2) | 1 | – | – | – |
| Proposed – Comparison Portion for Alternative 7G | – | – | – | – | – | – | – |
| Alternative 7G | – | – | – | – | – | – | – |
| Proposed – Comparison Portion for Alternative 7K | 14 (7) | 3 (3) | 9 (4) | 2 | – | – | – |
| Alternative 7K | 80 (44) | 1 (1) | 61 (33) | 11 (8) | 3 | 2 (2) | 2 |

Fish

A total of 19 stream crossings are proposed for the Proposed Route of Segment 7. Of stream crossings along Segment 7 and its alternatives on federally managed land, the only ones on NFS land would be five crossings along Alternative 7K. There would be three acres of riparian vegetation cleared during construction of the Proposed Route, less than one acre of which would be kept clear during operations. Of the riparian vegetation removed that is on federally managed land, there are two acres along Alternative 7K that would lie on NFS land. Table 3.10-31 compares the Proposed Route of Segment 7 with Alternatives 7A through 7K, as well as the Preferred Route, in regard to construction impacts to fish resources.

Table 3.10-31. Comparison of Stream Crossings (and the number on federally managed land, if any) and Acres of Riparian Clearing During Construction for the Segment 7 Preferred Route, Proposed Route, and Alternatives (and the amount on federally managed land, if any)

| Segment or Alternative | Number of Stream Crossings | Acres of Riparian Habitat Cleared ^{1/} |
|---|----------------------------|---|
| Preferred – Total Length | 27 (7) | 2 (t ^{2/}) |
| Proposed – Total Length | 19 (3) | 3 (t ^{2/}) |
| Proposed – Comparison Portion for Alternatives 7A,B | – | 1 |
| Alternative 7A | 10 (3) | 3 (1) |
| Alternative 7B | 8 (4) | 1 (<1) |
| Proposed – Comparison Portion for Alternative 7C | 1 | – |
| Alternative 7C | – | – |
| Proposed – Comparison Portion for Alternative 7D | – | 2 (t ^{2/}) |
| Alternative 7D | – | 3 |
| Proposed – Comparison Portion for Alternative 7E | 5 (1) | – |
| Alternative 7E | 7 (1) | – |
| Proposed – Comparison Portion for Alternative 7F | 17 (2) | t ^{2/} |
| Alternative 7F | 4 (1) | t ^{2/} |

Table 3.10-31. Comparison of Stream Crossings (and the number on federally managed land, if any) and Acres of Riparian Clearing During Construction for the Segment 7 Preferred Route, Proposed Route, and Alternatives (and the amount on federally managed land, if any) (continued)

| Segment or Alternative | Number of Stream Crossings | Acres of Riparian Habitat Cleared ^{1/} |
|--|----------------------------|---|
| Proposed – Comparison Portion for Alternative 7G | – | – |
| Alternative 7G | – | 1 |
| Proposed – Comparison Portion for Alternative 7K | 19 (3) | 3 (1) |
| Alternative 7K | 46 (37) | 10 (6) |

1/ Acreages are rounded to nearest whole acre.

2/ "t" indicates only a trace amount (<0.1 acre) of impact

Operations

Habitat Fragmentation

Table 3.10-32 presents the comparison portion of Segment 7 with Alternatives 7A through 7K, as well as the Preferred Route, for habitat fragmentation from proposed roads and the transmission line.

Table 3.10-32. Comparison of Habitat Fragmentation from Roads and Transmission Lines for the Segment 7 Preferred Route, Proposed Route, and Alternatives (no value indicates that the habitat type is not crossed)

| Segment or Alternative | Forest /Woodlands | | Shrublands | | Grasslands | | Riparian /Wetland | | Agriculture /Disturbed | |
|--|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|
| | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} |
| Preferred – Total Length | 2 | 143 | 18 | 517 | 3 | 238 | 0.4 | 9 | 26 | 275 |
| Proposed – Total Length | 4 | 175 | 16 | 582 | 4 | 267 | 0.4 | 8 | 30 | 318 |
| Proposed – Comparison Portion for Alternative 7A,B | 6 | 166 | 31 | 318 | 2 | 72 | 0.4 | 7 | 70 | 133 |
| Alternative 7A | 5 | 166 | 40 | 367 | 3 | 119 | 0.6 | 10 | 68 | 146 |
| Alternative 7B | 2 | 134 | 49 | 442 | 2 | 105 | 0.5 | 10 | 75 | 164 |
| Proposed – Comparison Portion for Alternative 7C | 1 | 11 | 4 | 68 | 6 | 70 | – | – | 31 | 53 |
| Alternative 7C | 1 | 11 | 6 | 68 | 6 | 70 | – | – | 31 | 53 |
| Proposed – Comparison portion for Alternative 7D | 2 | 9 | 7 | 84 | 6 | 82 | – | – | 7 | 19 |
| Alternative 7D | 2 | 9 | 7 | 84 | 6 | 82 | – | – | 6 | 19 |
| Proposed – Comparison Portion for Alternative 7E | 5 | 28 | 43 | 113 | 4 | 60 | – | – | 16 | 28 |
| Alternative 7E | 5 | 28 | 36 | 112 | 4 | 60 | – | – | 16 | 28 |
| Proposed – Comparison Portion for Alternative 7F | 4 | 28 | 28 | 116 | 4 | 75 | – | – | 22 | 48 |
| Alternative 7F | 4 | 28 | 27 | 116 | 4 | 75 | – | – | 23 | 48 |

Table 3.10-32. Comparison of Habitat Fragmentation from Roads and Transmission Lines for the Segment 7 Preferred Route, Proposed Route, and Alternatives (no value indicates that the habitat type is not crossed) (continued)

| Segment or Alternative | Forest /Woodlands | | Shrublands | | Grasslands | | Riparian /Wetland | | Agriculture /Disturbed | |
|--|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|
| | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} |
| Proposed – Comparison Portion for Alternative 7G | 1 | 11 | 98 | 63 | 3 | 30 | – | – | 38 | 32 |
| Alternative 7G | 2 | 11 | 101 | 63 | 3 | 30 | – | – | 38 | 32 |
| Proposed – Comparison Portion for Alternative 7K | 4 | 175 | 16 | 582 | 4 | 267 | 0.4 | 8 | 30 | 318 |
| Alternative 7K | 3 | 293 | 28 | 775 | 3 | 252 | 0.5 | 20 | 22 | 174 |

1/ The difference between average patch size prior to and following construction.

2/ The number of additional fragments created as a result of the Project.

Acreages are rounded to nearest whole acre, with the exception of riparian/wetland acreages which are rounded to the nearest 0.1 acre.

Big Game

Operations impacts to mule deer winter range along the Proposed Route are estimated at 89 acres. Of these acres, 23 are on federally managed land. Table 3.10-33 compares Segment 7 against Alternatives 7A through 7K, as well as the Preferred Route, in regard to impacts on big game winter range.

Table 3.10-33. Acres of Big Game Designated Winter Range Affected by Operations of the Segment 7 Preferred Route, Proposed Route, and Alternatives

| Segment or Alternative | Mule Deer | Elk | Bighorn Sheep | Total ^{1/} |
|--|-----------|-----|---------------|---------------------|
| Preferred – Total Length | 82 (21) | – | – | 82 (21) |
| Proposed – Total Length | 89 (23) | – | – | 89 (23) |
| Proposed – Comparison Portion for Alternative 7A,B | 32 (11) | – | – | 32 (11) |
| Alternative 7A | 20 (10) | – | – | 20 (10) |
| Alternative 7B | 22 (11) | – | – | 22 (11) |
| Proposed – Comparison Portion for Alternative 7C | 6 | – | – | 6 |
| Alternative 7C | 9 (1) | – | – | 9 (1) |
| Proposed – Comparison portion for Alternative 7D | 4 | – | – | 4 |
| Alternative 7D | 4 | – | – | 4 |
| Proposed – Comparison Portion for Alternative 7E | 4 (1) | – | – | 4 (1) |
| Alternative 7E | 9 (3) | – | – | 9 (3) |
| Proposed – Comparison Portion for Alternative 7F | 18 (2) | – | – | 18 (2) |
| Alternative 7F | 22 (9) | – | – | 22 (9) |
| Proposed – Comparison Portion for Alternative 7G | 4 (3) | – | – | 4 (3) |

Table 3.10-33. Acres of Big Game Designated Winter Range Affected by Operations of the Segment 7 Preferred Route, Proposed Route, and Alternatives (continued)

| Segment or Alternative | Mule Deer | Elk | Bighorn Sheep | Total ^{1/} |
|--|-----------|-----|---------------|---------------------|
| Alternative 7G | 4 (2) | – | – | 4 (2) |
| Proposed – Comparison Portion for Alternative 7K | 89 (23) | – | – | 89 (23) |
| Alternative 7K | 129 (90) | – | – | 129 (90) |

1/ Totals given have taken any overlap among winter range for different species into account so that the total number of acres impacted is reported; therefore, the total may not be the same as the sum of numbers in the row. Acreages are rounded to nearest whole acre; therefore, columns/rows may not sum exactly.

Conclusions

Habitat Fragmentation

The Proposed Route of Segment 7 would increase fragmentation in all five habitat types. The greatest increase in the number of patches would be in shrubland, while the largest decrease in average patch size would be in agriculture/disturbed.

Of the various alternatives considered, Alternative 7K would have the greatest impact to fragmentation compared to the comparison portion of the Proposed Route, followed by Alternative 7B (increasing the level of fragmentation compared to the Proposed Route). The remaining alternatives would have similar effects to the level of fragmentation compared to the Proposed Route.

The Proposed Route would have a greater impact to fragmentation than the Preferred Route for all habitat types.

Big Game

Alternatives 7C, 7E, 7F, 7G, and 7K would all increase the number of acres of winter range impacted during construction over the Proposed Route (Alternative 7G would have the same amount of impacts as the Proposed Route during operation). The selection of Alternative 7D would not have an effect on the amount of impact on mule deer winter range compared to the Proposed Route. Alternatives 7A and 7B would both decrease the amount of mule deer winter range impacted during construction and operation compared to the Proposed Route, with Alternative 7A having the least impact of all. Alternative 7K would impact the greatest amount of mule deer winter range.

The Preferred Route would increase impacts to big game habitat compared to the Proposed Route during construction, but would have fewer operations impacts.

Raptors

The selection of Alternatives 7A, 7B, 7E, 7F, or 7G would not change the number of raptor nests affected by the Project, compared to the Proposed Route. If Alternative 7C was chosen, it would avoid all four nests along the comparison portion of the Proposed Route. The selection of Alternative 7D would avoid one golden eagle nest impacted by the comparison portion of the Proposed Route. Alternative 7K would impact 56 more raptor nests than the Proposed Route and impact the greatest number of nesting raptors. If Alternative 7C were selected, the fewest breeding raptors would be impacted.

The Preferred Route would reduce, compared to the Proposed Route, the number of burrowing owl, ferruginous hawk, and golden eagle nests that would be affected but would not change the number of northern goshawk, red-tailed hawk, or Swainson’s hawk nests affected.

Fish

The number of stream crossings would increase under Alternatives 7A, 7B, 7E, and 7K, but would decrease under Alternative 7C and 7F. The amount of riparian vegetation cleared would increase under Alternatives 7A, 7D, 7G, and 7K. In regard to fish and habitat quality, Alternative 7K would have the greatest potential impacts, while Alternative 7F would likely have the least impacts.

The Preferred Route would result in an increase in impacts to fish and their habitats compared to the Proposed Route.

Segment 8

The preferred routes in Segment 8 are as follows:

| Preferred Route | Agency |
|---|---------------|
| Proposed Route incorporating Alternative 8B (Figure A-10) | BLM and IDANG |

Segment 8 would link the Midpoint and Hemingway Substations. This 131.5-mile single-circuit 500-kV transmission line would stay north of the Snake River generally parallel to an existing 500-kV transmission line, before ending at the Hemingway Substation. There are five Route Alternatives to the Proposed Route. Alternative 8A follows the WWE corridor but crosses the Snake River and I-84 twice (while the Proposed Route would stay north of this area). Alternatives 8B and 8C were originally proposed by the Proponents as parts of the Proposed Route but were later dropped from the Proposed Route to avoid planned developments near the cities of Kuna and Mayfield, respectively. Alternative 8D would rebuild a portion of an existing 500-kV transmission line to move it away from the National Guard Maneuver Area. Alternative 8D would be constructed within the ROW currently occupied by the existing line. Alternative 8E was proposed by the BLM in order to avoid crossing the Halverson Bar non-motorized portion of a National Register Historic District (see the discussion of 8E under Segment 9). The BLM has identified a Preferred Route that includes portions of the Proposed Route with Alternative 8B and generally avoids the SRBOP. The Segment 8 Preferred Route is 132.0 miles long, compared to 131.5 miles for the Proposed Route. Figure A-10 in Appendix A shows the location of the Segment 8 routes. The dominant habitat type along the Proposed Route of Segment 8 is shrubland (55 percent of miles crossed).

Construction

Big Game

Segment 8 as proposed would pass through habitats used by various big game species throughout the year. The Proposed Route of Segment 8 would impact 122 acres of winter range for pronghorn, 890 acres of winter range for mule deer, and 361 acres of winter range for elk. Because there is overlap among winter ranges for these three species, the total amount of this habitat type impacted by the Proposed Route is 1,247 acres. Of these acres, 773 are on federally managed land, none of which are

administered by the NFS. There is no parturition habitat identified along Segment 8. Table 3.10-34 compares Segment 8 against Alternatives 8A through 8E, as well as the Preferred Route, in regard to impacts on big game winter range.

Table 3.10-34. Comparison of Big Game Designated Winter Range Impacted by the Segment 8 Preferred Route, Proposed Route, and Alternatives during Construction (acres)

| Segment or Alternative | Length (miles) | Mule Deer | Pronghorn | Elk | Bighorn Sheep | Total^{1/} |
|--|-----------------------|------------------|------------------|------------|----------------------|---------------------------|
| Preferred – Total Length | 132.0 | 890 (560) | 122 (72) | 361 (220) | - | 1,247 (773) |
| Proposed – Total Length | 131.5 | 890 (560) | 122 (72) | 361 (220) | – | 1,247 (773) |
| Proposed – Comparison Portion for Alternative 8A | 51.9 | 767 (516) | – | 33 (33) | – | 767 (516) |
| Alternative 8A | 53.6 | 345 (179) | – | – | – | 345 (179) |
| Proposed – Comparison Portion for Alternative 8B | 45.3 | – | – | 112 (92) | – | 112 (92) |
| Alternative 8B | 45.8 | – | – | 112 (92) | – | 112 (92) |
| Proposed – Comparison Portion for Alternative 8C | 6.5 | – | – | 112 (92) | – | 112 (92) |
| Alternative 8C | 6.4 | – | – | 115 (36) | – | 115 (36) |
| Proposed – Comparison Portion for Alternative 8D | 6.9 | – | – | – | – | – |
| Alternative 8D | 8.1 | – | – | – | – | – |
| Proposed – Comparison Portion for Alternative 8E | 7.0 | – | – | – | – | – |
| Alternative 8E | 18.3 | – | – | – | 18 (18) | 18 (18) |

1/ Totals given have taken any overlap among winter range for different species into account so that the total number of acres impacted is reported; therefore, the total may not be the same as the sum of numbers in the row. Acreages are rounded to nearest whole acre; therefore, columns/rows may not sum exactly.

Raptors

The Proposed Route of Segment 8 would pass within 1 mile of 307 currently documented raptor nests: 43 of burrowing owls, 74 of ferruginous hawks, 20 of golden eagles, and 170 of prairie falcon (Table 3.10-35).

Table 3.10-35. Comparison of Raptor Nests within 1 mile of the Segment 8 Preferred Route, Proposed Route, and Alternatives (and the number on federally managed land, if any)

| Segment or Alternative | Total Nests | Number of Nests (number on federally managed land) | | | | |
|--|-------------|--|------------------|--------------|----------------|-----------------|
| | | Burrowing Owl | Ferruginous Hawk | Golden Eagle | Prairie Falcon | Red-tailed Hawk |
| Preferred – Total Length | 87 (43) | 35 (13) | 38 (19) | 14 (11) | – | – |
| Proposed – Total Length | 307 (254) | 43 (36) | 74 (44) | 20 (16) | 170 (158) | – |
| Proposed – Comparison Portion for Alternative 8A | 9 (8) | 1 | – | 8 (8) | – | – |
| Alternative 8A | 23 (10) | – | – | 20 (8) | – | 3 (2) |
| Proposed – Comparison Portion for Alternative 8B | 274 (232) | 42 (36) | 56 (33) | 6 (5) | 170 (158) | – |
| Alternative 8B | 54 (21) | 34 (13) | 20 (8) | – | – | – |
| Proposed – Comparison Portion for Alternative 8C | 13 (5) | – | 13 (5) | – | – | – |
| Alternative 8C | 18 (6) | – | 18 (6) | – | – | – |
| Proposed – Comparison Portion for Alternative 8D | 39 (29) | 14 (11) | 25 (18) | – | – | – |
| Alternative 8D | 44 (31) | 17 (13) | 27 (18) | – | – | – |
| Proposed – Comparison Portion for Alternative 8E | 184 (171) | 19 (18) | 2 (2) | 3 (3) | 160 (148) | – |
| Alternative 8E | 492 (442) | 16 (16) | 23 (22) | 7 (6) | 446 (398) | – |

Fish

A total of 12 stream crossings are proposed for the Proposed Route of Segment 8. During construction, 2 acres of riparian vegetation would be cleared along the Proposed Route, of which less than 1 acre would be kept clear for the life of the Project. Table 3.10-36 shows how the Proposed Route compares to its five Route Alternatives, as well as the Preferred Route, in regard to construction impacts to fish resources.

Table 3.10-36. Comparison of Stream Crossings (and the number on federally managed land, if any) and Acres of Permanent Riparian Clearing for the Segment 8 Preferred Route, Proposed Route, and Alternatives (and the amount on federally managed land, if any)

| Segment or Alternative | Number of Stream Crossings | Acres of Riparian Habitat Cleared ^{1/} |
|--|----------------------------|---|
| Preferred – Total Length | 12 (7) | 3 (1) |
| Proposed – Total Length | 12 (7) | 2 (1) |
| Proposed – Comparison Portion for Alternative 8A | 8 (3) | <1 (<1) |
| Alternative 8A | 4 (1) | 6 (<1) |
| Proposed – Comparison Portion for Alternative 8B | – | 1 (<1) |
| Alternative 8B | – | 2 (<1) |
| Proposed – Comparison Portion for Alternative 8C | – | <1 (<1) |
| Alternative 8C | – | t ^{2/} |
| Proposed – Comparison Portion for Alternative 8D | – | t ^{2/} |

Table 3.10-36. Comparison of Stream Crossings (and the number on federally managed land, if any) and Acres of Permanent Riparian Clearing for the Segment 8 Preferred Route, Proposed Route, and Alternatives (and the amount on federally managed land, if any) (continued)

| Segment or Alternative | Number of Stream Crossings | Acres of Riparian Habitat Cleared ^{1/} |
|--|----------------------------|---|
| Alternative 8D | – | t ^{2/} |
| Proposed – Comparison Portion for Alternative 8E | – | – |
| Alternative 8E | – | <1 (<1) |

1/ Acreages are rounded to nearest whole acre.

2/ “t” indicates only a trace amount (<0.1 acre) of impact

Operations

Habitat Fragmentation

Table 3.10-37 presents the comparison portion of the Segment 8 Proposed Route with Alternatives 8A through 8E, as well as the Preferred Route, with regard to habitat fragmentation from proposed roads and the transmission line.

Table 3.10-37. Comparison of Habitat Fragmentation from Roads and Transmission Lines by Habitat Type for the Segment 8 Preferred Route, Proposed Route, and Alternatives (no value indicates that the habitat type is not crossed)

| Segment or Alternative | Forest/Woodlands | | Shrublands | | Grasslands | | Riparian/Wetland | | Agriculture/Disturbed | |
|--|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|
| | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} |
| Preferred – Total Length | – | – | 2 | 308 | 2 | 363 | 0.3 | 5 | 8 | 90 |
| Proposed – Total Length | – | – | 3 | 475 | 2 | 562 | 0.5 | 11 | 8 | 80 |
| Proposed – Comparison Portion for Alternative 8A | – | – | 3 | 144 | 2 | 169 | – | – | 10 | 59 |
| Alternative 8A | – | – | 2 | 180 | 3 | 236 | – | – | 8 | 84 |
| Proposed – Comparison Portion for Alternative 8B | – | – | 4 | 260 | 3 | 322 | 0.6 | 9 | 8 | 17 |
| Alternative 8B | – | – | 3 | 143 | 2 | 183 | 0.4 | 3 | 8 | 32 |
| Proposed – Comparison Portion for Alternative 8C | – | – | 3 | 55 | 2 | 73 | – | – | 16 | 3 |
| Alternative 8C | – | – | 3 | 55 | 2 | 73 | – | – | 16 | 3 |
| Proposed – Comparison Portion for Alternative 8D | – | – | 2 | 48 | 3 | 78 | – | – | 2 | 2 |
| Alternative 8D | – | – | 2 | 50 | 3 | 82 | – | – | 1 | 2 |
| Proposed – Comparison Portion for Alternative 8E | – | – | 5 | 103 | 4 | 121 | 0.4 | 3 | 8 | 5 |
| Alternative 8E | – | – | 4 | 158 | 4 | 182 | 0.3 | 3 | 8 | 8 |

1/ The difference between average patch size prior to and following construction.

2/ The number of additional fragments created as a result of the Project.

Acreages are rounded to nearest whole acre, with the exception of riparian/wetland acreages which are rounded to the nearest 0.1 acre.

Big Game

Operations impacts along the Proposed Route for Segment 8 to big game winter range are estimated at approximately 95 acres for mule deer, 13 acres for pronghorn, and 37 acres for elk (Table 3.10-38). Due to overlap of winter ranges among these three species, the total amount of winter range that would be impacted by the Proposed Route is 131 acres. Of these 131 acres, 78 are on federally managed land, none administered by the NFS. Table 3.10-38 compares Segment 8 against Alternatives 8A through 8E, as well as the BLM’s Preferred Route, in regard to impacts on big game winter range.

Table 3.10-38. Acres of Big Game Designated Winter Range Affected by Operations, Segment 8 Preferred Route, Proposed Route, and Alternatives

| Segment or Alternative | Mule Deer | Pronghorn | Elk | Bighorn Sheep | Total ^{1/} |
|--|-----------|-----------|---------|---------------|---------------------|
| Preferred – Total Length | 95 (59) | 13 (7) | 37 (20) | – | 131 (78) |
| Proposed – Total Length | 95 (59) | 13 (7) | 37 (20) | – | 131 (78) |
| Proposed – Comparison Portion for Alternative 8A | 86 (56) | – | 5 (5) | – | 86 (56) |
| Alternative 8A | 48 (18) | – | – | – | 48 (18) |
| Proposed – Comparison Portion for Alternative 8B | – | – | 11 (9) | – | 11 (9) |
| Alternative 8B | – | – | 11 (9) | – | 11 (9) |
| Proposed – Comparison Portion for Alternative 8C | – | – | 11 (9) | – | 11 (9) |
| Alternative 8C | – | – | 15 (7) | – | 15 (7) |
| Proposed – Comparison Portion for Alternative 8D | – | – | – | – | – |
| Alternative 8D | – | – | – | – | – |
| Proposed – Comparison Portion for Alternative 8E | – | – | – | – | – |
| Alternative 8E | – | – | – | 1 (1) | 1 (1) |

1/ Totals given have taken any overlap among winter range for different species into account so that the total number of acres impacted is reported; therefore, the total may not be the same as the sum of numbers in the row. Acreages are rounded to nearest whole acre; therefore, columns/rows may not sum exactly.

The Proposed Route of Segment 8 would pass through pronghorn habitat in the Bennett Hills/Timmerman Hills unit of the Shoshone FO. The MFP for this area recommends that in pronghorn habitat, succulent forbs make up 15 to 20 percent of vegetation, and that 2- to 4-acre sagebrush patches with canopy cover over 20 percent and brush height over 15 inches be distributed over the landscape. Due to the relatively small amount of habitat permanently removed by the Project compared to the size of designated pronghorn areas, these recommendations are unlikely to be compromised.

Conclusion

Habitat Fragmentation

The Proposed Route would create fragmentation within all habitat types except for forest/woodlands, where there would be no effect from the Proposed Route or any of the Route Alternatives. The largest decrease in average patch size that would be caused by the Proposed Route is in agriculture/disturbed land (a decrease of 8 acres), and the biggest increase in patch counts would be in grasslands (562 additional patches). Most of the fragmentation impacts to riparian/wetland would be along the comparison portion for Alternative 8B, where adoption of the alternative would improve the change in patch count (from nine to three). Selection of the Route Alternatives 8C or 8D over the comparison portion of the Proposed Route would not result in a considerable difference in the level of fragmentation. Alternative 8E would increase fragmentation in most habitat types impacted. Alternative 8A would cause more fragmentation in general than

the Proposed Route, while 8B would decrease fragmentation in all habitat types except agriculture/disturbed.

In general, the Proposed Route would have a greater impact to fragmentation than the Preferred Route, except in agricultural areas where the Preferred Route would have the greatest impact to the level of fragmentation.

Big Game

The selection of either Alternative 8B or 8D would not change the total amount of big game winter range impacted during construction or operation, compared to the Proposed Route. Alternatives 8C and 8E would increase the number of acres impacted during construction and operation; 8E would cross a patch of bighorn sheep winter range that would otherwise be unaffected. Alternative 8A would result in the least amount of impacts, impacting roughly half as many acres as the comparison portion of the Proposed Route.

Selection of either the Preferred Route or the Proposed Route would not change the total amount of big game winter range impacted during construction or operations.

Raptors

The selection of Alternative 8A would avoid one burrowing owl nest, but impact 12 golden eagle nests and three red-tailed hawk nests that the Proposed Route would not impact. The selection of Alternative 8B would decrease the number of nests impacted by 220, avoiding burrowing owl, ferruginous hawk, golden eagle, and prairie falcon nests that are within 1 mile of the comparison portion of the Proposed Route. The selection of Alternative 8C, 8D, or 8E would increase the number of raptor nests impacted. Alternative 8C lies within 1 mile of five more ferruginous hawk nests than the comparison portion of the Proposed Route. Alternative 8D lies within 1 mile of 3 more burrowing owl nests and 2 more ferruginous hawk nests than the comparison portion. Alternative 8E lies within 1 mile of 3 fewer burrowing owl nests than the comparison portion, but 21 more ferruginous hawk nests, 4 more golden eagle nests, and 286 more prairie falcon nests. The selection of Alternative 8B would affect the fewest breeding raptors.

The Preferred Route would result in fewer raptor nests affected compared to the Proposed Route.

Fish

In terms of number of stream crossings, Alternative 8A would eliminate four crossings that the Proposed Route would have. All of the other Route Alternatives would have no effect on how many streams are crossed. For riparian habitat cleared, Alternatives 8A and 8B would increase the number of acres compared to the Proposed Route. The selection of Alternatives 8C, 8D, or 8E would not change the level of impacts to fish or their habitat compared to the Proposed Route. In regard to fish resources, selection of either the Proposed Route or Alternative 8A would likely have the least effects, though this would depend on the characteristics of the specific streams crossed and vegetation cleared.

The Preferred Route would slightly increase impacts to fish habitats compared to the Proposed Route (i.e., a 1-acre increase in impacts riparian habitat).

SRBOP

The Preferred Route would result in less impact to the resources and values for which the SRBOP was established than the other alternatives and those impacts could be mitigated to meet P.L. 103-64.

Segment 9

The preferred routes in Segment 9 are as follows:

| Preferred Route | Agency |
|--|---------------|
| Proposed Route incorporating Alternative 9E, revised to avoid PPH and Murphy (Figure A-11) | BLM |
| Alternative 9D (Figure A-11) | Owyhee County |

Segment 9 would link the Cedar Hill and Hemingway Substations with a 162.2-mile single-circuit 500-kV transmission line which skirts the Jarbidge and Owyhee Military Operating Areas to the north, then follows the WWE corridor just north of the Saylor Creek Air Force Range, passing through Owyhee County before entering the Hemingway Substation. There are eight Route Alternatives proposed. Alternative 9A was the Proponents' Proposed Route until that route was revised to avoid the Hollister area. Alternative 9B is being considered by the BLM because it follows the WWE corridor and parallels existing utility corridors. Alternative 9C was the Proponents' Proposed Route until that route was revised to avoid the Castleford area. Alternatives 9D through 9G were proposed by the Owyhee County Task Force in order to reduce impacts to private land. Alternatives 9F and 9H were proposed to avoid crossing the non-motorized area south of C.J. Strike Reservoir and as an alternate route if Alternative 8E is selected. The BLM has identified a Preferred Route that includes portions of the Proposed Route with Alternative 9E. Figure A-11 in Appendix A shows the location of the Segment 9 routes. A portion of Alternative 9D/F uses the same path as Alternative 8E in Segment 8; therefore, 8E and 9D/F could not both be selected. Alternative 9E has been revised to avoid sage-grouse PPH and to incorporate a recommended route change submitted by Owyhee County that avoids a planned subdivision near Murphy. The dominant habitat type along the Proposed Route of Segment 9 is shrubland (52 percent of miles crossed). The Segment 9 Preferred Route is 171.4 miles long, compared to 162.2 miles for the Proposed Route.

Construction

Big Game

The Proposed Route of Segment 9 would impact 205 acres of winter range for mule deer and 398 acres of winter range for pronghorn. There is no overlap between winter range for the two species, so the total amount impacted is 603 acres, 449 of which are on federally managed land, none of which is administered by the NFS. The Proposed Route would not affect any bighorn sheep winter range during construction, but Alternatives 9D through 9H would impact bighorn sheep winter range (Table 3.10-39). No parturition habitat has been officially designated along Segment 9 or any of its eight Route Alternatives; however, should an area be identified, the Proponents would work with the appropriate land-managing agency to avoid or reduce potential impacts. Table

3.10-39 compares Segment 9 against Alternatives 9A through 9H, as well as the BLM's Preferred Route, in regard to impacts on big game winter range.

The Bruneau MFP recommends not constructing new roads or developments that would increase human presence within bighorn sheep habitat. Alternatives 9D, 9E (revised), 9F, 9G, and 9H would not meet this recommendation.

Table 3.10-39. Comparison of Big Game Designated Winter Range Impacted by the Segment 9 Preferred Route, Proposed Route, and Alternatives (acres)

| Segment or Alternative | Total Miles | Bighorn Sheep | Mule Deer | Pronghorn | Total ^{1/} |
|--|-------------|---------------|-----------|-----------|---------------------|
| Preferred – Total Length | 171.4 | 75 (72) | 205 (10) | 558 (489) | 797 (631) |
| Proposed – Total Length | 162.2 | – | 205 (10) | 398 (339) | 603 (449) |
| Proposed – Comparison Portion for Alternative 9A | 7.8 | – | 50 (31) | – | 50 (31) |
| Alternative 9A | 7.7 | – | 58 (30) | – | 58 (30) |
| Proposed – Comparison Portion for Alternative 9B | 49.1 | – | – | – | – |
| Alternative 9B | 52.3 | – | – | – | – |
| Proposed – Comparison Portion for Alternative 9C | 14.4 | – | – | – | – |
| Alternative 9C | 14.4 | – | – | – | – |
| Proposed – Comparison Portion for Alts. 9D,F,G,H | 57.2 | – | – | 279 (241) | 279 (241) |
| Alternative 9D | 60.1 | 18 (18) | – | 11 (11) | 29 (29) |
| Alternative 9F | 63.3 | 18 (18) | – | 11 (11) | 29 (29) |
| Alternative 9G | 57.8 | 30 (30) | – | 17 (14) | 47 (44) |
| Alternative 9H | 61.0 | 30 (30) | – | 17 (14) | 47 (44) |
| Proposed – Comparison Portion for Alternative 9E (revised) | 61.4 | – | – | 360 (322) | 360 (322) |
| Alternative 9E (revised) | 70.6 | 75 (72) | – | 520 (472) | 554 (504) |

1/ Totals given have taken any overlap among winter range for different species into account so that the total number of acres impacted is reported; therefore, the total may not be the same as the sum of numbers in the row. Acreages are rounded to nearest whole acre; therefore, columns/rows may not sum exactly.

Raptors

Segment 9 would pass within 1 mile of 135 currently documented raptor nests: 9 of burrowing owl, 3 of common raven, 42 of ferruginous hawk, 57 golden eagle, 18 of prairie falcon, and 6 of Swainson's hawk (Table 3.10-40).

Table 3.10-40. Comparison of Raptor Nests within 1 mile of the Segment 9 Preferred Route, Proposed Route, and Alternatives (and the number that are on federally managed land, if any)

| Segment or Alternative | Total Nests | Number of Nests (number on federally managed land) | | | | | | | |
|--------------------------|-------------|--|---------------|--------------|------------------|--------------|----------------|-----------------|-----------------|
| | | American Kestrel | Burrowing Owl | Common Raven | Ferruginous Hawk | Golden Eagle | Prairie Falcon | Red-tailed Hawk | Swainson's Hawk |
| Preferred – Total Length | 138 (131) | – | 8 (5) | 2 (2) | 45 (45) | 60 (56) | 17 (17) | – | 6 (6) |
| Proposed – Total Length | 135 (126) | – | 9 (5) | 3 (3) | 42 (42) | 57 (52) | 18 (18) | – | 6 (6) |

Table 3.10-40. Comparison of Raptor Nests within 1 mile of the Segment 9 Preferred Route, Proposed Route, and Alternatives (and the number that are on federally managed land, if any) (continued)

| Segment or Alternative | Total Nests | Number of Nests (number on federally managed land) | | | | | | | |
|--|-------------|--|---------------|--------------|------------------|--------------|----------------|-----------------|-----------------|
| | | American Kestrel | Burrowing Owl | Common Raven | Ferruginous Hawk | Golden Eagle | Prairie Falcon | Red-tailed Hawk | Swainson's Hawk |
| Proposed – Comparison Portion for Alternative 9A | 2 (2) | – | – | – | 2 (2) | – | – | – | – |
| Alternative 9A | 2 | – | – | – | – | 2 | – | – | – |
| Proposed – Comparison Portion for Alternative 9B | 56 (53) | – | 3 (1) | – | 9 (9) | 24 (23) | 14 (14) | – | 6 (6) |
| Alternative 9B | 69 (49) | 1 (1) | 1 (1) | – | 4 (4) | 50 (33) | 9 (8) | 4 (2) | – |
| Proposed – Comparison Portion for Alternative 9C | 28 (26) | – | 1 | – | 9 (9) | 11 (10) | 1 (1) | – | 6 (6) |
| Alternative 9C | 40 (33) | 1 (1) | 1 | – | 4 (4) | 32 (27) | 1 (1) | 1 (1) | – |
| Proposed – Comparison Portion for Alts. 9D, F, G, H | 15 (10) | – | 4 (2) | 1 (1) | 7 (7) | 3 | – | – | – |
| Alternative 9D | 607 (544) | – | 101 (100) | – | 39 (33) | 21 (19) | 446 (392) | – | – |
| Alternative 9F | 570 (508) | – | 96 (96) | – | 44 (38) | 15 (13) | 415 (361) | – | – |
| Alternative 9G | 615 (563) | – | 95 (94) | – | 34 (29) | 26 (25) | 460 (415) | – | – |
| Alternative 9H | 578 (527) | – | 90 (90) | – | 39 (34) | 20 (19) | 429 (384) | – | – |
| Proposed – Comparison Portion for Alternative 9E (Revised) | 21 (15) | – | 4 (2) | 1 (1) | 7 (7) | 8 (4) | 1 (1) | – | – |
| Alternative 9E (Revised) | 24 (20) | – | 3 (2) | – | 10 (10) | 11 (8) | – | – | – |

Fish

A total of five stream crossings are proposed for the Proposed Route of Segment 9. None of the crossings that would be on federally managed land are on NFS land. There would be 4 acres of riparian vegetation cleared along the Proposed Route during construction (Table 3.10-41), 1 acre of which would be kept clear during operations. None of the riparian vegetation that would be cleared that is located on federally managed land is on NFS land.

Table 3.10-41. Comparison of Perennial Stream Crossings (and the number on federally managed land, if any) and Acres of Permanent Riparian Clearing for the Segment 9 Preferred Route, Proposed Route, and Alternatives (and the amount on federally managed land, if any)

| Segment or Alternative | Number of Stream Crossings | Acres of Riparian Habitat Cleared ^{1/} |
|--|----------------------------|---|
| Preferred – Total Length | 11 (10) | 2 (2) |
| Proposed – Total Length | 5 (3) | 4 (<1) |
| Proposed – Comparison Portion for Alternative 9A | 2 (1) | t ^{2/} |
| Alternative 9A | 5 (2) | <1 |
| Proposed – Comparison Portion for Alternative 9B | 2 (2) | <1 (<1) |
| Alternative 9B | 2 (2) | 1 (<1) |

Table 3.10-41. Comparison of Perennial Stream Crossings (and the number on federally managed land, if any) and Acres of Permanent Riparian Clearing for the Segment 9 Preferred Route, Proposed Route, and Alternatives (and the amount on federally managed land, if any) (continued)

| Segment or Alternative | Number of Stream Crossings | Acres of Riparian Habitat Cleared ^{1/} |
|---|----------------------------|---|
| Proposed – Comparison Portion for Alternative 9C | – | <1 (<1) |
| Alternative 9C | – | – |
| Proposed – Comparison Portion for Alts. 9D,F,G,H | 1 | 4 (t ^{2/}) |
| Alternative 9D | – | 2 (1) |
| Alternative 9F | – | 5 (1) |
| Alternative 9G | – | 3 (1) |
| Alternative 9H | – | 5 (1) |
| Proposed – Comparison Portion for Alt. 9E (revised) | 1 | 4 (t ^{2/}) |
| Alternative 9E (revised) | 7 (7) | 2 (2) |

1/ Acreages are rounded to nearest whole acre.

2/ “t” indicates only a trace amount (<0.1 acre) of impact

Operations

Habitat Fragmentation

Table 3.10-42 presents the amount of habitat fragmentation that would occur in the Analysis Area due to the proposed transmission line and roads during Project operations. Changes in average patch size and changes in patch counts, by habitat type, are presented for the Proposed Route of Segment 9, for Alternatives 9A through 9H, and for the Preferred Route.

Table 3.10-42. Comparison of Habitat Fragmentation from Roads and Transmission Lines by Habitat Type for the Segment 9 Preferred Route, Proposed Route, and Alternatives (no value indicates that the habitat type is not crossed)

| Segment or Alternative | Forest/ Woodlands | | Shrublands | | Grasslands | | Riparian/ Wetland | | Agriculture/ Disturbed | |
|---|--|--|--|--|--|--|--|--|--|--|
| | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} |
| Preferred – Total Length | – | – | 6 | 583 | 3 | 536 | 0.7 | 7 | 5 | 66 |
| Proposed – Total Length | 1 | 4 | 6 | 764 | 4 | 722 | 1.3 | 21 | 9 | 161 |
| Proposed – Comparison Portion for Alternative 9A | – | – | 11 | 71 | 3 | 41 | – | – | 9 | 17 |
| Alternative 9A | – | – | 11 | 75 | 3 | 44 | – | – | 9 | 17 |
| Proposed – Comparison Portion for Alternative 9B | – | – | 8 | 235 | 4 | 175 | 0.3 | 1 | 9 | 50 |
| Alternative 9B | – | – | 5 | 274 | 4 | 246 | 0.1 | 1 | 10 | 84 |

Table 3.10-42. Comparison of Habitat Fragmentation from Roads and Transmission Lines by Habitat Type for the Segment 9 Preferred Route, Proposed Route, and Alternatives (no value indicates that the habitat type is not crossed) (continued)

| Segment or Alternative | Difference in Fragmentation Levels Between Pre- and Post-Construction | | | | | | | | | |
|---|---|-------------------------------------|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|--|-------------------------------------|
| | Forest/Woodlands | | Shrublands | | Grasslands | | Riparian/Wetland | | Agriculture/Disturbed | |
| | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} |
| Proposed – Comparison Portion for Alternative 9C | – | – | 22 | 86 | 1 | 22 | 0.7 | 1 | 23 | 27 |
| Alternative 9C | – | – | 23 | 87 | – | 21 | 0.5 | 1 | 24 | 32 |
| Proposed – Comparison Portion for Alts. 9D,F,G,H | – | – | 5 | 329 | 5 | 395 | 1.9 | 17 | 7 | 52 |
| Alternative 9D | – | – | 3 | 365 | 3 | 421 | 1.2 | 16 | 5 | 53 |
| Alternative 9F | – | – | 3 | 366 | 3 | 422 | 1.2 | 16 | 6 | 57 |
| Alternative 9G | – | – | 3 | 353 | 3 | 409 | 1.4 | 16 | 5 | 48 |
| Alternative 9H | – | – | 3 | 354 | 3 | 410 | 1.4 | 16 | 6 | 52 |
| Proposed – Comparison Portion for Alt. 9E (revised) | – | – | 3 | 207 | 3 | 256 | 1.1 | 11 | 5 | 39 |
| Alternative 9E (revised) | – | – | 6 | 250 | 3 | 255 | 2.4 | 10 | 3 | 9 |

1/ The difference between average patch size prior to and following construction.

2/ The number of additional fragments created as a result of the Project.

Acreages are rounded to nearest whole acre, with the exception of riparian/wetland acreages which are rounded to the nearest 0.1 acre.

Big Game

Operations impacts to mule deer winter range for the Proposed Route of Segment 9 are estimated at 17 acres and to pronghorn winter range at 43 acres. The Proposed Route would not affect any bighorn sheep winter range during operations, but Alternatives 9D through 9H would impact bighorn sheep winter range (Table 3.10-43). A total of 46 acres of the operations impact by the Proposed Route would be on federally managed land, none administered by the NFS. Table 3.10-43 compares Segment 9 against Alternatives 9A through 9H, as well as the Preferred Route, in regard to impacts on big game winter range.

Table 3.10-43. Acres of Big Game Designated Winter Range Affected by Operations, Segment 9 Preferred Route, Proposed Route, and Alternatives

| Segment or Alternative | Bighorn sheep | Mule deer | Pronghorn | Total ^{1/} |
|--|---------------|-----------|-----------|---------------------|
| Preferred – Total Length | 10 (9) | 17 (10) | 62 (51) | 84 (69) |
| Proposed – Total Length | – | 17 (10) | 43 (35) | 59 (46) |
| Proposed – Comparison Portion for Alternative 9A | – | 5 (3) | – | 5 (3) |
| Alternative 9A | – | 5 (3) | – | 5 (3) |

Table 3.10-43. Acres of Big Game Designated Winter Range Affected by Operations, Segment 9 Preferred Route, Proposed Route, and Alternatives (continued)

| Segment or Alternative | Bighorn sheep | Mule deer | Pronghorn | Total ^{1/} |
|--|---------------|-----------|-----------|---------------------|
| Proposed – Comparison Portion for Alternative 9B | – | – | – | – |
| Alternative 9B | – | – | – | – |
| Proposed – Comparison Portion for Alternative 9C | – | – | – | – |
| Alternative 9C | – | – | – | – |
| Proposed – Comparison Portion for Alternatives 9D,F,G,H | – | – | 28 (24) | 28 (24) |
| Alternative 9D | 1 (1) | – | <1 (<1) | 2 (2) |
| Alternative 9F | 1 (1) | – | <1 (<1) | 2 (2) |
| Alternative 9G | 2 (2) | – | 2 (2) | 5 (4) |
| Alternative 9H | 2 (2) | – | 2 (2) | 5 (4) |
| Proposed – Comparison Portion for Alternative 9E (revised) | – | – | 36 (33) | 36 (33) |
| Alternative 9E (revised) | 10 (9) | – | 55 (49) | 61 (56) |

1/ Totals given have taken any overlap among winter range for different species into account so that the total number of acres impacted is reported; therefore, the total may not be the same as the sum of numbers in the row. Acreages are rounded to nearest whole acre.

Conclusion

Habitat Fragmentation

The Proposed Route would result in fragmentation to all five habitat types. The greatest decrease in average patch size along the Proposed Route would occur in agriculture/disturbed, with a decrease of nine acres; and the greatest increase in patch count would occur in shrublands, with 764 patches created. Fragmentation of forest/woodlands would be the same regardless of which alternative is selected. The selection of any of the alternatives would have a similar effect on fragmentation of shrublands, grasslands, and riparian/wetland as the comparison portions of the Proposed Route, or cause more fragmentation. Fragmentation of agriculture/disturbed land would also be similar to the Proposed Route or worse than the Proposed Route under any of the alternatives except for Alternative 9E (revised), which would cause less fragmentation than the comparison portion of the Proposed Route.

The Proposed Route would have a greater impact to fragmentation than the Preferred Route for all habitat types.

Big Game

Bighorn sheep winter range would be encountered along Alternatives 9D, 9E (revised), 9F, 9G, and 9H; if none of these Route Alternatives are selected, no bighorn sheep habitat would be affected. The amount of mule deer winter range that would be affected during construction would increase by 8 acres if Alternative 9A is selected, but no alternative would affect the amount impacted during operations. Of the 43 acres of pronghorn winter range that would be affected by the Proposed Route of Segment 9 during operations, 28 would be impacted by the comparison portions for Alternatives 9D, 9F, 9G, and 9H. Selection of Alternatives 9D, 9F, 9G, or 9H would decrease the amount

of pronghorn winter range affected during operation to 2 acres or less. The selection of Alternative 9E would result in an increase of 19 acres impacted during operation. In summary, the selections that would result in the least acres of operations impacts to big game winter range are the Proposed Route or Alternatives 9A through 9C for bighorn sheep, or Alternatives 9D, 9F, 9G, or 9H for pronghorn. Alternatives 9D or 9F would also result in the least impacts to winter range overall when all three species are combined, during both construction and operations.

The Preferred Route would increase impacts to big game habitat compared to the Proposed Route.

Raptors

All alternatives would increase the number of nests impacted compared to the Proposed Route, the biggest increase being seen along Alternative 9G, which would impact 600 more nests than the Proposed Route.

The Preferred Route would increase the number of nests impacted for all species assessed compared to the Proposed Route, except for the burrowing owl, raven, and prairie falcon.

Fish

Alternatives 9A and 9E (revised) would increase the number of streams crossed compared to the Proposed Route, while Alternatives 9D, 9F, 9G, or 9H would decrease the number of crossings. Selection of Alternatives 9D, 9E (revised), or 9G would decrease the amount of riparian habitat removed, while Alternatives 9B, 9F, or 9H would cause an increase. Alternative 9D would likely have the least impact on fish and their habitat.

The Preferred Route would increase the number of streams crossed compared to the Proposed Route, but would decrease the amount of riparian habitat impacted.

SRBOP

The Preferred Route would result in less impact to the resources and values for which the SRBOP was established than the other alternatives and those impacts could be mitigated to meet P.L. 103-64.

Segment 10

The BLM’s Preferred Route in Segment 10 is as follows:

| Preferred Route | Agency |
|------------------------------|---------------|
| Proposed Route (Figure A-12) | BLM |

Segment 10 would link the Cedar Hill and Midpoint Substations with a 34.4-mile single-circuit 500-kV line. Segment 10 would follow a WWE corridor for most of the route. The Preferred/Proposed Route would also be adjacent to the existing 345-kV line most of this length and has been sited to follow the same alignment of the planned SWIP. Either the SWIP or Gateway West would be built, but not both. There are no Route Alternatives proposed along this segment. Figure A-12 in Appendix A shows the location of the Preferred/Proposed Route in Segment 10. This comparatively short segment traverses

mostly developed land near Twin Falls, Idaho; 93 percent of the Preferred/Proposed Route would cross disturbed or developed land or agriculture.

Construction

Big Game

Segment 10 would pass through habitat types used by various big game species throughout the year. In addition, Segment 10 would impact 203 acres of designated winter range for mule deer. Of these 203 acres, 184 are on federally managed land, none of which are administered by the NFS. There is no elk parturition habitat identified along Segment 10.

Raptors

Construction of Segment 10 would take place within 1 mile of six known raptor nest locations: two burrowing owl nests (one on BLM-administered land), three golden eagle nests, and one red-tailed hawk nest.

Fish

There would be no stream crossings along Segment 10, and 1 acre of riparian vegetation would be cleared during construction, less than an acre of which would be kept clear during operations. No riparian vegetation on federally managed land would be impacted by Segment 10.

Operations

Habitat Fragmentation

The levels of fragmentation resulting from road and transmission lines along Segment 10 are listed in Table 3.10-44. No Route Alternatives have been assessed for Segment 10.

Table 3.10-44. Comparison of Habitat Fragmentation from Roads and Transmission Lines by Habitat Type for the Segment 10 Preferred/Proposed Route

| Segment or Alternative | Forest/ Woodlands | | Shrublands | | Grasslands | | Riparian/ Wetland | | Agriculture/ Disturbed | |
|--------------------------------------|--|--|--|--|--|--|--|--|--|--|
| | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} | Reduction in Average patch size (acre) ^{1/} | Change in Patch Count ^{2/} |
| Preferred/Proposed – Total Length | 1 | 4 | 2 | 70 | 5 | 83 | 0 | 0 | 19 | 77 |

1/ The difference between average patch size prior to and following construction.

2/ The number of additional fragments created as a result of the Project.

Acres are rounded to nearest whole acre, with the exception of riparian/wetland, which is rounded to the nearest 0.1 acre.

Segment 10 would cause habitat fragmentation in all five habitat types analyzed. The biggest decrease in average patch size, 19 acres, would be in agriculture/disturbed, and the greatest number of new patches created would be in grasslands, with 83.

Big Game

During operations, Segment 10 would impact 28 acres of mule deer winter range, 14 acres of which is federally administered, none by the NFS.

Conclusions

Segment 10 has no proposed alternatives and therefore no further conclusions about impacts on this segment are necessary.