

3.10 GENERAL WILDLIFE AND FISH

This section describes the potential impacts from the Proposed Route and Route Alternatives on the terrestrial and aquatic environments during construction, operations, and decommissioning. The Proposed Route and Alternatives would pass through multiple habitat types currently utilized by wildlife species (Appendix E, Figures E.10-1 and E.10-2). Any activities that adversely affect habitat (terrestrial or aquatic) can impact the survival and reproductive success of wildlife.

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 and Idaho (and in the small areas of Nevada and Utah that would be affected by one alternative).

3.10.1.1 Analysis Area

As explained in Section 3.6 – Vegetation Communities, a remote sensing approach, 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

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).

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, staging areas, and tensioning/splicing sites (see Section 3.1 – Introduction). This distance was chosen so that indirect effects to wildlife would be captured. While ground clearing and the transmission line itself would take up only a small percentage of the Analysis Area (approximately 40,300 acres of the 16,082,500-acre Analysis Area cleared during construction, or 0.3 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 tensioning and 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 expected to attenuate below annoyance levels in less than 0.5 mile (see Section 3.23 – Noise). This buffer would also include edge effects caused by vegetation removal. 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.

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).

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 nests	On public lands, certain activities are restricted seasonally to protect breeding raptors. Timing and buffer restrictions are generally limited to active nests.
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.

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 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. 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.

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. 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 to be Analyzed

The following wildlife-related issues were brought up by the public during public scoping (Tetra Tech 2009a), 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, or SMA 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), 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 guidance (BLM 2007d). 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 (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 some documents providing interim 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). 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

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

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 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 the Gateway West Project are listed in Section 2.2, Table 2.2-1. 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 consistent with Forest Service standards or in conformance with BLM requirements are found in Appendix F, and a summarized list is found in Table 2.2-1.

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 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 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 Wyoming Department of Environmental Quality (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.

One Alternative, 7I, would cross slightly into Nevada, running parallel to and approximately 270 feet south of the Nevada-Idaho state line for 9.4 miles. Only a tiny percentage of the total impacted area would lie in Nevada if this alternative were chosen. Nevada has a Wildlife Action Plan, which identifies habitats and species of concern, that are at risk, or that need more research to be carried out (Wildlife Action Plan Team 2006). Nevada also has laws relating to hunting and fishing that include bag or possession limits and seasonal restrictions that are enforceable by law. There are also regulations for species that can be taken with the appropriate permit and in the appropriate season, species that can always be taken, and species that can never be taken (NDW 2009).

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 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 2009b, 2010c, 2010d).

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). The state wildlife departments (WGFD, Idaho Department of Fish and Game [IDFG], and Nevada Department of Wildlife) 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 raptor nests on both public and private lands. For big game winter range, areas considered were “winter range” and “crucial winter range” in Wyoming, “winter range” in Idaho, and “winter range” and “crucial winter range” in Nevada. 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), winter range (Idaho), and general and crucial winter range (Nevada) will be referred to collectively in this document as “winter range.” 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 2009b). Ground truth transects were conducted during the imagery interpretation to improve the quality of the vegetation association interpretation.

The suitability of various wildlife habitat types from the vegetation mapping was assessed using GIS modeling, which combined appropriate vegetation associations with existing GIS biophysical parameters (such as organization of vegetation types, patch extent, slope, elevation, and vegetation cover/height). A detailed description of the remote sensing interpretation and subsequent habitat modeling effort can be found in the Vegetation and Habitat Baseline Technical Report (Tetra Tech 2009b).

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 increase 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 2009a). 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. 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 conditions were 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

Existing conditions are characterized in this section based on the number of miles that the centerline of the Proposed Route or Route Alternatives would cross through different habitat types and/or the number of acres that would be cleared of vegetation or otherwise impacted. 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. This section describes habitat types crossed by the Proposed Route centerline (habitat types crossed by the Route Alternatives are listed in Appendix D) as characterized by the Project-specific remote imagery analysis. The section goes on to use the data from BLM, FS, and statewide databases to determine the acres of designated big game winter range and parturition habitat impacted, 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 ^{1/}	Common Species
Grassland <i>(both native and semi-natural)</i>	13	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, wandering garter snake, prairie rattlesnake, striped whipsnake, and racer

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^{1/}	Common Species
Shrubland <i>(disturbed shrubland, sagebrush, saltbrush, greasewood, and other shrubland types)</i>	69	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, wandering garter snake, striped whipsnake, racer, and Great Basin gopher snake
Agricultural Land <i>(including Conservation Reserve Program lands)</i>	10	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
Forest/Woodland <i>(conifer, deciduous, juniper vegetation communities)</i>	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	2	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, and black crappie

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 ^{1/}	Common Species
Developed/Disturbed Lands and Unmapped Areas	1	Few native species; typically house sparrow, European starling, rock pigeon, American crow

1/ Numbers may not sum to 100 due to rounding.

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 69 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. Wildlife species inhabiting specific types of 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 2009b 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 11.3 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 the Proposed Routes of Segment 1W(a) (5.0 miles) and Segment 9 (3.2 miles), and along Alternatives 9B and 9C (1.1 miles each). 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 Route of Segments 4, 5, 7, 8, 9, and 10 for a total of 113.1 miles along, and by Alternatives 1E-A; 1W-A; all alternatives for Segments 4, 5, and 9; and most alternatives for Segments 7 and 8. When the lengths of the Proposed Route and all Route Alternatives are added together, agricultural lands make up 10 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 and 1E, 2, 4, 5, and 7; and Alternatives 1E-B, 1E-C, all Segment 4 alternatives, and most alternatives for Segments 5 and 7. 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. 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, 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 usually defined as being at least 180 years old, though the precise definition varies by region and agency).

On the Medicine Bow-Routt and Caribou-Targhee NFs, where the ROW passes through the forest/woodland habitat type in visually sensitive areas, the edges of the ROW would be “feathered,” or cut so that the edge of the ROW is not straight. This would be accomplished by removing some larger trees further into the forest than the standard width of the ROW (see description in Section 3.2 – Visual Resources).

Wetlands are areas where saturation with water is the dominant factor determining the nature of the soil and the plant species present. Wetlands, riparian areas, and open water are uncommon along most of the Proposed Route and Route Alternatives, comprising 2 percent of miles crossed by the centerlines. The highest proportions of wetlands are found along Alternatives 2B (6 percent), 4A (4 percent), and 5D (5 percent), and Segment 4 (4 percent). 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. Therefore, acres of wetland disturbed by the Project would be reconstructed, rehabilitated, and/or mitigated (see Section 3.9.3 in Section 3.9 – Wetlands and Riparian Areas).

Much of the habitat crossed by the proposed Project has already been highly fragmented by existing developments. A total of approximately 143,879 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 and Route Alternatives, with an average patch size of

131 acres. By habitat type, there are 57,776 patches of shrubland, 52,179 patches of grassland, 15,309 patches of agriculture/disturbed areas, 12,591 patches of forest or woodlands, and 6,024 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 3.10.2.2.

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 each of the species mentioned above except for white-tailed deer (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 harsh winter conditions to survive the 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, Figure E.10-4).

Mule deer winter range is crossed by each segment of the Proposed Route. The greatest proportion of mule deer winter range is along Segment 5, where 60 percent of the centerline of the Proposed Route crosses this habitat designation. The proportions of other segments' centerlines that are mule deer winter range vary from 6 to 43 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. There is a small amount of winter range for moose along Segment 4 (see Table 3.10-19). 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 (*Lemmiscus 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*).

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 (*T. elegans vagrans*), Great Basin gopher snake (*Pituophis catenifer deserticola*), sagebrush lizard (*Sceloporus graciosus*), short-horned lizard (*Phrynosoma hernandesi*), 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 (*Hyla 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.

Migratory Birds

More than 230 species of birds occur regularly in the vicinity of the Proposed Route and Alternatives. Of these, nearly all are protected under the MBTA (see Table 3.10-2 for a list of common birds found within the Analysis Area). 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 live in 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. Birds with the potential to occur in the area also range from species that are candidates for federal listing (i.e., 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.

Raptors

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 a raptor migratory route. The most common species observed there between August 27 and November 5, 2009, were (in descending order) red-tailed hawk, sharp-shinned hawk, Cooper's hawk, golden eagle, and American kestrel (Smith 2009). 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, osprey, Cooper's hawk, sharp-shinned hawk, great horned owl, short-eared owl, western screech-owl, and flammulated owl are known to nest within 1 mile of the Project. Table D.10-2 (Appendix D) lists the known nesting sites for raptors where the Proposed Route or Alternatives

would pass within a 1-mile buffer of nest sites (also see Appendix E, Figures E.10-5 and E.10-6). Table D.10-2 (Appendix D) incorporates the previously known nests (BLM and Forest Service shapefiles) and the results of the aerial and ground surveys conducted by Tetra Tech (2008).

Nests belonging to multiple raptor species are known to occur along the Proposed Route centerline. The species with the most nests in this area are ferruginous hawk and prairie falcon. There are 63 known burrowing owl nests (10 percent), 38 golden eagle nests (6 percent), 22 red-tailed hawk nests (3 percent), and 11 Swainson's hawk nests (2 percent); all remaining raptor species detected have less than ten 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 four raptor species that are the most common in the Analysis Area have specific habitat requirements and nesting habits. Ferruginous hawk, prairie falcon, and golden eagle 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. 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 in order to minimize direct and indirect effects. The Proposed Route for Segment 8 lies within 1 mile of the highest number of raptor nests, 256, of any of the segments. This segment runs through the SRBOP, home to the largest concentration of nesting raptors in North America, which explains this high number of nests. On the Rawlins FO, the transmission line and/or ancillary facilities would result in 23 acres of operations disturbance within 1,200 feet of ferruginous hawk nests, and 15 acres within 825 feet of other raptor nests, which does not meet guidelines in the RMP covering this area.

Fish

A variety of aquatic habitats are crossed by the Proposed Route and Route Alternatives, including ephemeral and perennial streams, springs, 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. Segment 4 has the greatest proportion of wetland/riparian vegetation (these two habitat types were combined for analysis), with 3 percent of its length falling in this habitat type. Segment 10 has the least amount of wetland/riparian habitat, representing less than 0.1 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 less than 0.1 percent 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 (*Micropterus dolomieu*) and 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. 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. There is a Design Variation involving use of two single-circuit structures proposed by the Proponents for Segments 2, 3, and 4 (see Section 2.2 for details), which is analyzed below in Section 3.10.2.4 and a Structure Variation that is analyzed in Section 3.10.2.5. The Proponents have also proposed a Schedule Variation, analyzed in Section 3.10.2.6, in which one of the two single circuits to be constructed in Segments 2, 3, and 4 and a portion of Segment 1W would be built

on an extended schedule with construction beginning approximately 2 years after completion of the initial construction. Within each category there are sections that address effects on habitat (including fragmentation), big game, migratory birds, raptors, and fish.

Mitigation measures or 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 Proponent-proposed EPMs and Agency-required mitigation measures can be found in Table 2.7-1 of Chapter 2.

3.10.2.1 No Action Alternative

Under the No Action Alternative, the Project would not be constructed or operated. No Project-related impacts to wildlife or fish would occur; however, impacts to wildlife or fish would continue as a result of natural events (such as fire, drought, and severe weather) and existing developments within the Analysis Area. Impacts similar to those described below may occur due to new transmission lines built instead of the Project.

3.10.2.2 Effects Common to All Action Alternatives

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 17,551 acres: 9,910 acres of shrubland (most of it previously disturbed), 2,537 acres of grassland (over 95 percent non-native), 2,090 acres of agricultural land, 2,360 acres of forests and woodlands, 389 acres of disturbed or developed land, 144 acres of wetlands and riparian areas, 32 acres of open water, and 90 acres of miscellaneous and unclassified areas. Table D.6-2 in Appendix D summarizes the impact by vegetation community 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 Proponents have attempted to minimize fragmentation resulting from the Project by avoiding routing the line through large blocks of contiguous habitat. The primary way in which the Project would affect the degree of fragmentation 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. (This would be predominantly experienced by smaller species or those less likely to move through open areas devoid of vegetation such as the pygmy rabbit, discussed in Section 3.11 – Special Status Wildlife and Fish 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, 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 b and Tables D.10-4a and b.

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 by narrowing roads from 14 to 16 feet wide to 8 feet wide. 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 through D.10-5b) cannot be summed in order 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 not considered) would create an additional 23,829 fragments (resulting from segmenting existing fragments and/or creating new fragments), with a new average patch size of 96 acres. This would be a decrease in average patch size of 34 acres from current conditions. 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 11,535 new sagebrush/shrubland fragments would be created by the Proposed Route with a reduction of approximately 44 acres per patch compared to preconstruction conditions. Approximately 6,524 new patches of grassland, 2,427 of forest/woodlands, 507 of riparian/wetlands, and 2,836 of agriculture/disturbed lands would be created, with an average reduction in patch size of approximately 19 acres in grassland, 71 acres in forest/woodlands, 7 acres in

riparian/wetlands, and 31 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 subalpine fir (*Abies lasiocarpa*), 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.) Only 6 percent of the Project crosses the forest/woodland habitat type, so these edge effects particular to forests are expected to be minimal.

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 (*Rana catesbeiana*), 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, Revegetation, and Weed Management Plan (mitigation measures WEED-1 through WEED-6 in Section 3.8 – Invasive Plant Species). 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 federal 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-17). Therefore, the spread of noxious weeds due to construction of the Project is not expected to have an appreciable impact on wildlife habitat. In addition, the Proponents have proposed to reduce the construction-related impacts on habitat through dust control during construction (EPM AR-2, Appendix C-1).

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 Agencies would require the following mitigation measure on federal land and recommend the measure be implemented on all lands:

WILD-12 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.

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.

Indirect effects on habitat during the construction period would include fugitive dust dispersing from the immediate construction area and air pollution from the diesel motors used by the construction equipment. Impacts from fugitive dust and air pollution 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. The effects of air pollution could include an increase in the acidity of rain, which could harm plants and amphibians, and contribute to global climate change. Most impacts from fugitive dust would last only until the next rain event, when the dust is washed away and diluted. The immediate impacts from air pollution caused by vehicles would decrease in a matter of hours as particles dilute in the air and settle out; however, the exhaust could combine with other effects of air pollution and cumulatively have a more lasting effect.

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, likely within 1 to 2 years. 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.

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 would be impacted for much longer than other habitat types. This impact would displace wildlife that use this habitat type for several 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.

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 be a one-time vegetation treatment, and this type of ROW edge would not be maintained throughout Project operations. An impact to the forest/woodland habitat type from feathering would be to reduce successional stage of the forest that gets treated due to the removal of the largest trees, thus impacting mature forest more than younger forest types. Another impact of feathering could be to lessen the severity of edge effects; instead of the cleared ROW, containing herbaceous vegetation lying adjacent to, for example, a mature forest, patches of immature forest would lie in between these two vegetation stages. Feathering could also affect the amount of trees lost to windthrow.

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. The Proponents have proposed 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. Due to these

measures and to mitigation that would be required by the Agencies on federal 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 in general is not expected to negatively impact big game due to the small amount of habitat affected compared to the large home ranges of these species, and the cleared areas would still provide forage as they recover. Vegetation clearing would alter some big game designated winter and parturition range. This could potentially harm wintering animals by removing 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. 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 Agencies require that the Proponents incorporate the following mitigation measure on federal land and recommend that they apply it Project-wide:

- 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 federal 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 F for a comprehensive calendar of seasonal restrictions).

The Proponents have proposed to supply monitors to determine seasonal occupancy of various big game restricted areas. The Agencies reject the monitoring proposal and require that only appropriate Agency personnel may determine presence or likely presence of big game species in restricted areas. Therefore, the Agencies have identified the following measure to reduce impacts to big game:

- WILD-1 Requests for exceptions from closure periods and areas must be submitted by the Proponents to the appropriate land management agency office in which the exception is requested. Established exception processes on federally managed lands must be followed. The appropriate agency, or a contractor chosen by the Proponents and approved by the agency, shall 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 must 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.

The Project, as currently proposed, does not cross any designated pronghorn fawning areas. If the route is changed in the future so that it does cross these areas, the Proponents have proposed the following EPMS in order to minimize impacts (in addition, on federal land, WILD-1 would apply):

- PGC-1 No construction May 1 to May 30 in identified areas.
- PGC-2 Weekly monitoring will commence May 15 and continue until PGC-3 is met. The Proponents will provide monitoring results to the appropriate land management agency.
- PGC-3 If animals are present after May 15, no construction until two consecutive weekly monitoring sessions show no animals present or until July 1 if animals are present.

To minimize the impacts to pronghorn in designated winter range, the Proponents have proposed the following EPMS (in addition, on federal land, WILD-1 would apply):

- PGC-4 Weekly monitoring will commence November 15 in identified areas (see PGC-5). The Proponents will provide monitoring results to the appropriate land management agency.
- PGC-5 Construction may continue past November 15 if no animals are detected, but contractor must be prepared to shut down once four or more antelope are seen in mapped habitat, and may not start work until March 1 at the earliest and if PGC-6 and 7 are met.

PGC-6 Weekly monitoring will be reinitiated, beginning February 15 and continue until PGC-7 is met. The Proponents will provide monitoring results to the appropriate land management agency.

PGC-7 If animals are present, no construction until May 1 or until two consecutive weekly monitoring sessions confirm no animals are present.

The Project, as currently proposed, does not cross any designated bighorn sheep lambing areas. If the route is changed in the future so that it does cross these areas, the Proponents have proposed the following EPMs in order to minimize impacts (in addition, on federal land, WILD-1 would apply):

PGC-8 No construction May 1 to May 30 in identified areas.

PGC-9 Weekly monitoring will commence May 15 and continue until PGC-10 is met. The Proponents will provide monitoring results to the appropriate land management agency.

PGC-10 If animals are present after May 15, no construction until two consecutive weekly monitoring sessions show no animals present or until July 1 if animals are present.

To minimize the impacts to bighorn sheep in designated winter range, the Proponents have proposed the following EPMs (in addition, on federal land, WILD-1 would apply):

PGC-11 Weekly monitoring will commence November 15 in identified areas (see PGC-12).

PGC-12 Construction may continue past November 15 if no animals are detected, but contractor must be prepared to shut down once one or more bighorn sheep are seen in mapped habitat, and may not start work until March 1 at the earliest, and if PGC-13 and 14 are met.

PGC-13 Weekly monitoring will be reinitiated beginning February 15 and continue until PGC-14 is met. The Proponents will provide monitoring results to the appropriate land management agency.

PGC-14 If animals are present, no construction until May 1, or until two consecutive weekly monitoring sessions confirm no animals are present.

The Project, as currently proposed, does not cross any designated bighorn sheep yearlong areas. If the route is changed in the future so that it does cross these areas, the Proponents have proposed the following EPMs in order to minimize impacts (in addition, on federal land, WILD-1 would apply):

PGC-15 Surface disturbance is prohibited year-round within mapped habitat.

To minimize the impacts to elk in designated calving areas, the Proponents have proposed the following EPMs (in addition, on federal land, WILD-1 would apply):

PGC-16 No construction May 1 to May 30 in identified areas.

PGC-17 Weekly monitoring will commence May 15 and continue until PGC-18 is met. The Proponents will provide monitoring results to the appropriate land management agency.

PGC-18 If animals are present after May 30, no construction until two consecutive weekly monitoring sessions show no animals present or until July 1 if animals are present.

To minimize the impacts to elk on designated winter range, the Proponents have proposed the following EPMs (in addition, on federal land, WILD-1 would apply):

PGC-19 Weekly monitoring will commence November 15 (see PGC-20).

PGC-20 Construction may continue past November 15 if no animals are detected, but contractor must be prepared to shut down once four or more elk are seen in mapped habitat, and may not start work until March 1 at the earliest, and if the following conditions are met.

PGC-21 Weekly monitoring will be reinitiated beginning February 15 and continue until PGC-22 is met. The Proponents will provide monitoring results to the appropriate land management agency.

PGC-22 If animals are present, no construction until May 1 or until two consecutive weekly monitoring sessions confirm no animals are present.

The Project, as currently proposed, does not cross any designated moose calving areas. If the route is changed in the future so that it does cross these areas, the Proponents have proposed the following EPMs in order to minimize impacts (in addition, on federal land, WILD-1 would apply):

PGC-23 No construction May 1 to May 30 in identified areas.

PGC-24 Weekly monitoring will commence May 15 and continue until PGC-25 is met. The Proponents will provide monitoring results to the appropriate land management agency.

PGC-25 If animals are present after May 30, no construction until two consecutive weekly monitoring sessions show no animals present or until July 1 if animals are present.

To minimize the impacts to moose on designated winter range, the Proponents have proposed the following EPMs (in addition, on federal land, WILD-1 would apply):

PGC-26 Weekly monitoring will commence November 15 in identified areas (see PGC-27).

PGC-27 Construction may continue past November 15 if no animals are detected, but contractor must be prepared to shut down once one or more moose are seen in mapped habitat, and may not start work until March 1 at the earliest, and if the following conditions are met.

PGC-28 Weekly monitoring will be reinitiated beginning February 15 and continue until PGC-29 is met. The Proponents will provide monitoring results to the appropriate land management agency.

PGC-29 If animals are present, no construction until May 1 or until two consecutive weekly monitoring sessions confirm no animals are present.

The Project, as currently proposed, does not cross any designated mule deer fawning areas. If the route is changed in the future so that it does cross these areas, the Proponents have proposed the following EPMs in order to minimize impacts (in addition, on federal land, WILD-1 would apply):

PGC-30 No construction May 1 to May 30 in identified areas.

PGC-31 Weekly monitoring will commence May 15 and continue until PGC-32 is met. The Proponents will provide monitoring results to the appropriate land management agency.

PGC-32 If animals are present after May 30, no construction until two consecutive weekly monitoring sessions show no animals present or until July 1 if animals are present.

To minimize the impacts to mule deer on designated winter range, the Proponents have proposed the following EPMs (in addition, on federal land, WILD-1 would apply):

PGC-33 Weekly monitoring will commence November 15 in identified areas (see PGC-34).

PGC-34 Construction may continue past November 15 if no animals are detected, but contractor must be prepared to shut down once four or more mule deer are seen in mapped habitat, and may not start work until March 1 at the earliest, and if the following conditions are met.

PGC-35 Weekly monitoring will be reinitiated beginning February 15 and continue until PGC-36 is met. The Proponents will provide monitoring results to the appropriate land management agency.

PGC-36 If animals are present, no construction until May 1 or until two consecutive weekly monitoring sessions confirm no animals are present.

Indirect effects on big game from Project construction would include fugitive dust, increased human activity, and habitat alteration. Increased unauthorized 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 Agencies recommend the following mitigation measure on all lands:

- WILD-5 Surveys will be conducted within 0.5 mile of the route prior to construction for caves, abandoned mines, and adits. If suitable bat roosts are identified, the Proponents will consult with the applicable land management agency to determine appropriate protective measures.

Injuries and 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 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, which 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. 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. Vegetation surrounding bat roost sites may be important for maintaining a suitable internal microenvironment for bats; therefore, vegetation surrounding such structures would be retained. 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.

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

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.

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.

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, potentially including these three species. (See Section 3.11 – Special Status Wildlife and Fish Species for more details on the northern leopard frog.) Therefore, for the Medicine Bow-Routt NFs to grant a special use permit, the Project would either need to be altered so that it is consistent with the Forest Plan regarding the boreal toad, wood frog, and northern leopard frog, or the Forest Plan would need to be amended (see Appendix F-2).

Migratory Birds

There would be some direct impacts on migratory birds and game birds, including Species of Conservation Concern and Game Birds Below Desired Condition, during construction. These impacts could include collisions with construction vehicles, other equipment, or structures; direct removal of nesting habitat; destruction of 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.)

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 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. 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 (IPC 2008). In order for the intent of the Proponents’ Avian Protection Plans to be met, the following measure would apply Project-wide in response to the requirements of the MBTA:

WILD-8 Flight diverters will be installed and maintained where the transmission line crosses rivers at the locations identified in Table 3.10-3. The flight diverters will be placed on at least one of the higher conductors or ground wires at each river crossing in order to reduce avian collisions. Additional locations may be identified by the Agencies.

Table 3.10-3. 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	1E	1.9	–	–	–
	Alternative 1E-A	1.9	–	–	–
	1W(a)	8.8	–	–	–
	1W(c)	0.4	–	–	–
	2	41.4	–	–	–
	Alternative 2A	22.2	–	–	–
Little Medicine Bow River	1E	84.6	–	–	–
	Alternative 1E-B	56.3	–	–	–
Medicine Bow River	2	0.9	–	–	–
Bear River	4	131.5	139.9	154.3	179.2
	Alternative 4A	73.4	139.9	–	–
	Alternative 4B	74.5	99.2	–	–
	Alternative 4C	84.3	99.2	–	–
	Alternative 4D	75.1	99.2	–	–
Bear River	Alternative 4E	84.9	99.2	–	–
	Alternative 4F	131.5	139.9	–	–
Green River	4	118.7	–	–	–
	Alternative 4A	53.4	–	–	–
	Alternatives 4B,C,D,E	0.4	–	–	–
Hams Fork River	4	105.4	–	–	–
	Alternative 4A	53.3	–	–	–
	Alternative 4F	54.6	–	–	–
	Alternatives 4B,C,D,E	118.8	–	–	–
Smiths Fork River	4	125.3	–	–	–
Snake River	5	52.8	–	–	–
	Alternative 5E	3.6	–	–	–
	Alternative 5D	16.4	–	–	–
	8	24.6	46.6	128.0	–
	Alternative 8A	25.0	–	–	–
	Alternative 8B	42.7	–	–	–
	Alternative 8E	10.2	–	–	–
	Alternative 9D	46.2	–	–	–
	Alternative 9F	46.1	–	–	–
	Alternative 9G	44.2	–	–	–
	Alternative 9H	48.5	–	–	–
10	23.5	–	–	–	

Nesting birds are particularly sensitive to disturbance, and some disturbance could lead to nest failure or abandonment. To avoid violating the MBTA, the Agencies have proposed the following mitigation measure Project-wide:

WILD-10 To the extent feasible, all vegetation clearing would be conducted prior to the onset of the avian breeding season (generally April 15 through July 31, depending on local conditions and federal land management plan requirements) in order to limit the potential impact of clearing on nesting birds. In addition, pre-construction surveys within the disturbed portion of the ROW and extending a minimum of 30 feet on either side of the ROW shall be conducted. If an active nest is found during pre-construction surveys, the nest will be identified to species, flagged, and avoided until any young have fledged. Avoidance distances are species-specific and must be approved by a USFWS-approved biologist.

In addition, to reduce the impacts to some birds from habitat removal, the Agencies have proposed the following mitigation measure:

WILD-11 Snags shall be maintained to the extent practical along the outer portions of the Project's right-of-way in order to reduce the impacts to habitat for cavity nesters.

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 cowbirds 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.

Raptors

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 during nesting 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 to reduce disturbance to nesting raptors (see Appendix I). All suggestions for analyses and survey protocols issued by USFWS (Smith 2010; USFWS 2010a) would also be adhered to. Federal, state, and local jurisdictions have requested minor changes to the Project's design and additional

changes will also likely occur prior to the Final EIS. Therefore, the BLM and cooperating agencies have identified the following mitigation measure:

- WILD-3 The Project shall be designed and constructed in compliance with Avian Power Line Interaction Committee standards (APLIC 2006) 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, should also be in compliance with Avian Power Line Interaction Committee standards.

In addition, the Proponents have proposed the following EPMS to apply to golden eagles:

- PRC-12 A pedestrian or aerial survey of known nest locations will be conducted weekly during the appropriate seasons, beginning no more than 2 weeks prior to construction. The Proponents will provide survey results to the appropriate land management agency.
- PRC-13 If nesting eagles are present, monitoring will be conducted until the young have fledged or the nest fails, at which point construction can begin.
- PRC-14 If no active nests are detected during the pre-construction surveys construction will occur without further monitoring.

The Proponents also propose the following EPMS to apply to all raptor species:

- PRC-18 Pre-construction surveys will be conducted during the appropriate seasonal timeframe prior to construction, to identify active nests within 0.5 of a mile of the ROW within suitable habitat. The Proponents will provide survey results to the appropriate land management agency.
- PRC-19 If an active nest is found during the protocol level surveys, construction is prohibited within 0.5 mile of the nest until monitoring shows that the young have fledged or the nest fails, whichever occurs sooner. The Proponents will provide survey results to the appropriate land management agency.
- PRC-20 If no active nests are detected during the pre-construction surveys construction will occur without further monitoring.

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:

- WILD-4 On federal lands, accurate monitoring, including identifying nest occupancy, shall be conducted in order to ensure that raptor nests are located in advance of any construction activities. This would be needed to ensure that all construction activities would cease in areas near active nests. Biological monitors on site would perform these surveys ahead of construction. If an occupied nest is found, the appropriate restrictions and closures would be adhered to. All encounters with nesting raptors in the

Analysis Area must be reported to the biological monitor and to appropriate agencies.

The Proponents have accepted the following Agency-proposed mitigation measure, which would apply Project-wide:

- WILD-9 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).

As seasonal stipulations would apply to construction activities within buffers when nests are active, no adverse impacts to the reproductive activity of raptors are expected from disturbance (see Forest Service 2003a, 2003b).

- WILD-6 As part of their annual aerial flight line maintenance activities, the Proponents would document nesting activity (by species) on any towers constructed as a result of this Project. This would occur after the first year of construction until year 10 of operations. Results would be provided to the applicable land management agency.

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 no 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. 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-8, 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. Increase human presence could also increase the risk of fire, which would alter raptor habitat and prey populations, and possibly injure eggs or chicks. Edge effects brought about by vegetation removal could

lead to a change in plant species composition, potentially lowering the quality of habitat for raptors or their prey.

Fish

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 limited to the period of in-stream work and a short time afterward, until sediment settled back to the bottom of the stream; however, injuries and deaths caused by turbidity could have long-term population-level effects.

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 effects on sediment.

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 be about 14 to 16 feet wide at each stream crossing during construction. 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, mitigation measures, 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). The BLM requires or recommends, depending on the FO, avoiding perennial surface waters, wetlands, and riparian areas by 500 feet. These areas were routed around to the degree feasible; however, some of these areas were unavoidable. Site-specific crossing plans will be developed for each of these areas (see TESWL-1).

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. As noted above, road crossings would be about 14 to 16 feet wide. 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 C-4), the riparian removal could range from up to 125 to 350 feet wide depending on the width of the ROW. There are approximately 1,615 acres of mapped riparian habitat within the Analysis Area, of which 58 would be impacted during construction. 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. 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. 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 mitigation measure would be required on federally managed lands:

FISH-1 On BLM-managed land, all culverts, whether temporary or permanent, must be designed to meet BLM Manual 9113 standards. Culverts should be located, designed, constructed, and maintained according to standards that preserve or improve streambed gradients and velocities to allow fish passage and that minimize erosion and sediment damage. On federal lands, unless the applicable management plan has specific requirements for stream crossings, use the following for culverts in channels with less than 3 percent slope:

- The minimum culvert width shall be equal to or greater than 1.5 times the active channel width.
- The culvert shall be placed level (zero percent slope).
- The bottom of the culvert shall be buried into the streambed at not less than 20 percent of the culvert height at the outlet, and not more than 40 percent of the culvert height at the inlet. Embedment does not apply to bottomless culverts.

At sites where the channel slope is greater than 3 percent, additional consideration should be given to alternate design options such as bottomless arch culverts or fords (low-water crossings). This is because of the difficulty of providing for the passage of aquatic species through culverts installed at these sites. Also, the culvert would be installed so that its slope would match the average grade of the stream immediately up- and

down-stream of the culvert site. Follow RMP guidelines where specific requirements are included. On NFS lands, Forest Plan standards and guidelines shall apply.

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 a National Pollutant Discharge Elimination System (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 (SW-1 through SW-12). See Section 3.16 – Water Resources for more information on aquatic mitigation measures and permitting.

Flow reduction in downstream systems may have adverse effects to fish resources. Stream habitat is often limited by flow amount especially during low-flow summer conditions. The estimated water usage from construction activities on a typical day for transmission line construction would be about 2,140 to 3,340 cubic feet for dust control. If this would occur over an 8-hour period, it would equal a draw of 0.07 to 0.12 cubic feet per second. Overall, this reduction in stream flow would have inconsequential effects on stream habitat and most non-sensitive fish species would not be adversely affected. However, according to the Upper Colorado Endangered Fish Recovery Program, any water withdrawal over 4,356,000 cubic feet per year, would result in a *may affect, likely to adversely affect* determination for four federally listed fish species. The Proponents have estimated total construction water use (concrete batching and dust control) at 314.6 acre-feet or 13,702,747 cubic feet. See Appendix B, Table B-10.

Another potential impact to fish habitat during construction is the risk of hazardous materials entering surface water supplies. To prevent this, the Proponents have committed to following all state requirements for containment of hazardous materials.

To reduce impacts to fish and fish habitat, the following measure would be required on federally managed lands:

- FISH-2 All in-stream construction actions will be conducted when critical fish life stages can be avoided as designated by the appropriate state and federal agencies. All culverts placed in fish habitat will be suitable, as determined by the federal or state agency, for passage by all life stages present or potentially present within the stream reach. Riparian vegetation removal should be kept to a minimum along fish-bearing streams. Blasting in or adjacent to fish-bearing streams will require the state fish agency's approval prior to blasting. 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 to be used to restore the site of the crossing to pre-Project conditions when temporary roads are decommissioned.

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 mitigation measure will apply in all wetlands and waters of the United States:

- FISH-4 If an aquatic invasive species is discovered during surveys for wetlands and waters of the U.S. conducted for USACE and state permitting prior to construction, the waterbody will be flagged and noted on the construction drawings. After work is complete in that 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 in the Analysis Area.

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 removed vegetation will be reseeded.

Operations

Habitat

Effects on wildlife habitat from Project operations would include habitat loss, alteration, and fragmentation. The Proposed Route would affect 5,022 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, 2,147 (43 percent) would be forest/woodlands, 2,075 (41 percent) shrublands, 372 would be grassland (7 percent; 95 percent of it non-native), 224 (4 percent) agriculture, 128 (3 percent) developed or disturbed habitat, 38 (0.1 percent) riparian and wetland, 8 (less than 0.1 percent) open water, and 31 (0.1 percent) unclassified or miscellaneous. Outside of the permanent ROW, vegetation would be allowed to regrow. Although this is classified as a “temporary” impact, in the case of sagebrush, for example, it would affect several generations of wildlife that depend on this habitat type, such as sage sparrows, until vegetation could grow back and regain its wildlife habitat function. Vegetation removed within the permanent ROW would be maintained every 3 to 10 years (annually in some places where vegetation grows quickly) so that only grasses, forbs, 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 (8 feet wide during operations) 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. 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 (1,315 acres or 19 percent), 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 would be closed to the public.

Existing road densities on the Proposed Route vary from 1.3 to 2.2 miles of road per square mile. Resulting road densities after the Project is completed would vary from 2.1 to 2.7 miles of road per square mile. 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. (See the discussion of fragmentation effects 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 are not typically considered contributors to habitat fragmentation 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 3.11.2). 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 b 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 b in Appendix D make the same comparisons as Tables D.10-3a and b; however, they consider only transmission lines as the source of fragmentation. Tables D.10-5a and b 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 Proposed Route may 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 3 years to ensure that reclamation is successful, or as decided by the land-managing agency (Appendix C-2).

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 aurally 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 C-4 for more details. The Proponents would adhere to big game closure periods while conducting operations and maintenance work (see Appendix C-4). 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 miles per hour speed limit (see WILD-2 earlier under Construction), and the open habitat types throughout the majority of the Analysis Area, allowing for high visibility of animals near 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 staging areas, 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 due to vehicles and increased human presence. The spread of noxious weeds from Project operations is addressed in Section 3.8.2.2 and Appendix C-4. 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. The Agencies recommend that the Proponents develop a fire prevention and control plan that would require Project personnel to carry fire-fighting equipment in their vehicles (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 (OM-6, Appendix C-4).

The Medicine Bow Forest Plan prohibits activities that would degrade the primitive character of the area. For this Project to be developed, a plan amendment would be required. If this amendment to the Forest Plan is made and the transmission line allowed, the land crossed by the Project would be allocated to MA 8.3 with an ROS classification of Roded Natural. This could have impacts on wildlife by allowing more developments to occur in this area. Exact impacts to wildlife from this are unknown, because whether these projects would occur and what types of projects they would be are not known, but they are expected to be similar to impacts from the Gateway West Project.

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. These impacts could negatively affect wildlife species that depend on contiguous shrubland habitat type.

Grasslands

The primary impact to grasslands during operations would be loss of habitat. Small areas (a total of 33 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.

Agriculture/Disturbed Areas

Operations impacts to agricultural 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 (483 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.

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 (0.3 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.

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.

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 limit 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, so big game along a substantial portion of the Proposed Route already use similarly disturbed areas. This would decrease any potential impact from the Project on migratory movements of these animals. 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 and approximately annual access by truck, all-terrain vehicle, and foot. See Appendix C-4 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 C-4). Unauthorized use of the ROW could also increase harvest of big game animals. To reduce an increase in big game harvest due to unauthorized use of Project-related 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 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.

Injuries and 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 severity of injuries would vary depending on the injury type. The impacts of injuries could range from no noticeable effect for a minor injury to permanent damage to an individual, which could decrease reproductive success 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 (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. Small mammals could also be more vulnerable to predation during Project operations due to the use of Project structures as perches by raptors. In order to minimize this risk, the mitigation measures TESWL-2 and TESWL-3 (listed in Table 2.7-1 and in Section 3.11 – Special Status Wildlife and Fish Species) would be implemented. 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.

Injuries and mortalities to reptiles and amphibians could occur due to collisions from vehicles. The 25 mph speed limit would decrease this possibility by increasing the chance for them to escape the path of the vehicle. 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 which 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.

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.

Migratory Birds

Project operation is expected to have only minor impacts to most migratory bird and game bird individuals, including Species of Conservation Concern and Game Birds Below Desired Condition, because the presence of the transmission line, structures, and access roads do not present barriers to movement through fragmentation, create

excessive noise, or otherwise cause major behavior changes, for the most part. Most birds are physically and behaviorally able to cross the distance between two adjacent fragments that Project roads would create due to their ability to travel quickly (i.e., flight). Measurable impacts to non-sensitive migratory bird populations are also not expected, 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.) 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 cowbirds could use Project structures to survey for prey and find nests to parasitize.

Collisions with transmission lines and electrocutions could result in limited 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. 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. The Agencies have assumed that collision risk is low but not zero over the life of the Project and have proposed WILD-8 (in the Construction portion of Section 3.10.2.2) in addition to the commitments from the Proponents spelled out in their Avian Protection Plans to further reduce risk.

Electrocutions are not expected to cause substantial mortalities because the potential for this would exist at only three locations, for a distance of 200 to 500 feet at each occurrence (see discussion above under Construction – Raptors).

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 three- to ten-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 C-4 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-23 in Table 2.1-4).

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.

Raptors

Raptor species are less likely to collide with powerlines than other avian species (Olendorff et al. 1981). Implementation of measure WILD-8 would further 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).

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. The Green River RMP has a requirement that applies to raptor nests, as follows:

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.

Depending on what the appropriate distance is determined to be for each nest, the Project may not be in conformance with this standard, and an amendment to the RMP would be required (see Appendix F-1). The Medicine Bow Forest Plan has two Standards that apply to northern goshawk nests and fledgling areas. Standard 5 required designation of a minimum of 200 acres as post-fledgling 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). 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.

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, 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 Proponents, in addition to Agency-proposed mitigation (see Table 2.1-4), have proposed the following EPM:

- OM-22 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. 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. Streams 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 Proposed Route and Alternatives by Segment

The 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 Gateway West 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 by the Proponents and Agency mitigation measures 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 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 federal lands would be sited, designed, and constructed according to pertinent management plan requirements (see mitigation measures WQA-2 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-federal 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.

Segment 1E

Segment 1E, as proposed, would link the Windstar and Aeolus Substations in south-central Wyoming with a 100.6-mile 230-kV single-circuit transmission line. Twenty acres of the expansion of Windstar and Aeolus Substations and 0.5 acre for one regeneration site are attributed to Segment 1E. Alternative 1E-A is a 16.1-mile alternative along the north end of Segment 1E, which was the Proponents' initial proposal before moving the Proposed Route at the suggestion of local landowners to avoid the more settled area around Glenrock. Alternative 1E-B is 21.4 miles longer than the Proposed Route but is being considered by the Proponents because it would avoid a Wyoming-designated sage-grouse core area to the east. The BLM has required the consideration of Alternative 1E-C, which parallels the Segment 1W 230-kV lines into the Aeolus Substation (see Appendix A, Figure A-2). Segment 1E would cross part of the Medicine Bow-Routt NFs in the Deer Creek Range. The most common habitat along the Proposed Route is shrubland (75 percent).

Construction

Big Game

Segment 1E would pass through habitats used by various big game species throughout the year. Approximately 573 acres of designated winter range of mule deer, pronghorn, elk, and bighorn sheep would be affected by Project construction along the Proposed Route (Table 3.10-4). Of these, 61 acres are on federal land, all administered by the BLM. There is no parturition or summer habitat identified along Segment 1E for any big game species.

Table 3.10-4. Comparison of Designated Winter Range Impacted by the Segment 1E Proposed Route and Alternatives 1E-A through 1E-C (acres)

Segment or Alternative	Length (miles)	Mule Deer		Pronghorn		Elk		Bighorn sheep		Total ^{1/}	
		Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal
Proposed – Total Length	100.6	406	36	403	37	105	19	37	6	573	61
Proposed – Comparison Portion for Alternative 1E-A	17.6	184	<1	147	<1	–	–	–	–	184	<1
Alternative 1E-A	16.1	125	–	114	–	–	–	–	–	125	–
Proposed – Comparison Portion for Alternative 1E-B	37.9	48	7	164	31	40	<1	–	–	207	32
Alternative 1E-B	59.3	277	61	235	53	207	33	–	–	430	71
Proposed – Comparison Portion for Alternative 1E-C	75.4	187	34	242	37	105	19	37	6	354	59
Alternative 1E-C	48.7	120	39	81	37	34	9	–	–	134	50

1/ Totals given have taken any overlap among winter range for different species taken into account so that the total number of acres impacted is reported.

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

Raptors

Construction of Segment 1E would occur within 1 mile of four currently documented ferruginous hawk nests, seven golden eagle nests, one prairie falcon nest, and two northern goshawk nests. Of the nests on federal land shown in Table 3.10-5, the northern goshawk nests are on NFS lands. Surveys for northern goshawks on the

Table 3.10-5. Comparison of Raptor Nests within 1 mile of the Segment 1E Proposed Route and Alternatives 1E-A through 1E-C, Showing How Many Nests are on Federal Land

Segment or Alternative	Total Nests	Number of Nests (number on federal land)				
		Bald Eagle	Ferruginous Hawk	Golden Eagle	Prairie Falcon	Northern Goshawk
Proposed – Total Length	14 (7)	–	4 (2)	7 (3)	1	2 (2)
Proposed – Comparison Portion for Alternative 1E-A	–	–	–	–	–	–
Alternative 1E-A	1	1	–	–	–	–
Proposed – Comparison Portion for Alternative 1E-B	11 (4)	–	4 (2)	6 (2)	1	–
Alternative 1E-B	12 (5)	–	4 (3)	6 (2)	2	–
Proposed – Comparison Portion for Alternative 1E-C	14 (7)	–	4 (2)	7 (3)	1	2 (2)
Alternative 1E-C	6 (5)	–	4 (3)	–	1 (1)	1 (1)

Medicine Bow-Routt NFs during 2010 found no territorial goshawks or active goshawk nests (Tetra Tech 2010c). Table 3.10-5 compares the portion of the Proposed Route with Alternatives 1E-A through 1E-C with regard to proximity to raptor nests. The Medicine Bow Forest Plan has standards regarding the amount of vegetation that can be removed in occupied northern goshawk territories and about characteristics and size of post-fledging area that must be maintained within occupied territories. Within the Medicine Bow-Routt NFs, the Project as currently proposed would not meet these standards. The Proposed Route would impact 10 acres within 1 mile of northern goshawk nests during construction. If Alternative 1E-C is selected, 7 of these acres would not be impacted. 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).

Fish

A total of three stream crossings are proposed for Segment 1E. Table 3.10-6 compares Segment 1E with Alternatives 1E-A through 1E-C with regard to construction impacts to fish resources. Of the riparian vegetation on federal land that would be cleared, there is less than an acre along the Proposed Route (along the comparison portion for Alternative 1E-C) that is on NFS land.

Table 3.10-6. Comparison of Stream Crossings (and the number on federal land, if any) and Acres of Riparian Clearing during Construction for the Segment 1E Proposed Route and Alternatives 1E-A through 1E-C (and amount on federal land, if any)

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

1/ Acreages are rounded to nearest whole acre.

Operations

Habitat Fragmentation

Table 3.10-7 presents the Proposed Route for Segment 1E compared to Alternatives 1E-A through 1E-C for habitat fragmentation from proposed roads and the transmission line.

Table 3.10-7. Comparison of Habitat Fragmentation from Roads and Transmission Lines by Habitat Type for the Segment 1E Proposed Route and Alternatives 1E-A through 1E-C

Segment or Alternative	Forest/Woodlands		Shrublands		Grasslands		Riparian/Wetland		Agriculture/Disturbed	
	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}
Proposed – Total Length	-416	188	-77	213	-101	369	-23	39	-24	25
Proposed – Comparison Portion for Alternative 1E-A	-261	17	-38	64	-60	198	-15	28	-29	25
Alternative 1E-A	-178	17	-50	62	-61	194	-28	25	-27	25
Proposed – Comparison Portion for Alternative 1E-B	-503	28	-105	82	-83	46	-448	8	-	-
Alternative 1E-B	-427	64	-55	74	-68	79	-	-	-15	3
Proposed – Comparison Portion for Alternative 1E-C	-438	174	-98	153	-144	171	-101	11	-	-
Alternative 1E-C	-375	113	-65	139	-177	274	-38	3	-	-

1/ The difference between average patch size following construction.

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

Acreages are rounded to nearest whole acre.

Big Game

Operations impacts to big game in Segment 1E would be limited to the presence of the transmission line facilities and access roads for the life of the Project, including 110 acres of winter ranged used by pronghorn, 111 acres used by mule deer, 24 acres by elk, and 10 acres used by bighorn sheep (Table 3.10-8). Due to overlap among winter range of the different species, the total amount of winter range impacted by the Proposed Route would be 152 acres, 11 of which is on federal land, all of it administered by the BLM.

Table 3.10-8. Comparison of Acres of Designated Winter Range Impacted during Operations by the Segment 1E Proposed Route and Alternatives 1E-A through 1E-C (acres)

Segment or Alternative	Mule Deer		Pronghorn		Elk		Bighorn sheep		Total ^{1/}	
	Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal
Proposed – Total Length	111	8	110	6	24	3	10	1	152	11
Proposed – Comparison Portion for Alternative 1E-A	47	<1	39	<1	-	-	-	-	47	<1
Alternative 1E-A	39	0	36	-	-	-	-	-	39	0

Table 3.10-8. Comparison of Acres of Designated Winter Range Impacted during Operations by Proposed Segment 1E and Alternatives 1E-A through 1E-C (acres) (continued)

Segment or Alternative	Mule Deer		Pronghorn		Elk		Bighorn sheep		Total ^{1/}	
	Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal
Proposed – Comparison Portion for Alternative 1E-B	15	2	41	5	9	<1	–	–	52	5
Alternative 1E-B	56	14	43	11	46	7	–	–	87	16
Proposed – Comparison Portion for Alternative 1E-C	55	8	68	6	24	3	10	1	95	10
Alternative 1E-C	40	10	31	9	10	3	–	–	44	13

1/ Totals given have taken any overlap among winter range for different species taken into account so that the total number of acres impacted is reported.

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

Where Segments 1E and 1W cross the NF, road density caused by the Project has been calculated. Table 3.10-9 shows existing road densities on NFS land and densities of roads that would exist during Project operations, by fifth-field watershed. Road densities are considered to be low when less than 0.7 miles per square mile, moderate from 0.7 to 1.7 miles per square mile, and high when above 1.7 (Wisdom et al. 2000).

Table 3.10-9. Road Densities on NFS Lands before and after Project Implementation (miles per square mile)

Route or Segment Fifth-field Watershed	Existing		With Project		
	Total Road Density	Open Road Density	New Project Roads	Total Road Density	Open Road Density ^{1/}
Proposed Routes – 1W(a), 1W(c), 1E					
Bates Creek	1.6	1.6	1.8	3.3	1.6
Deer Creek	2.9	0.1	0.1	3.0	0.1
Alternative Route 1W-A					
Bates Creek	1.6	1.6	1.8	3.3	1.6
Deer Creek	2.9	0.1	0.1	3.0	0.1

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 habitat type that would see the greatest number of additional patches created by the Proposed Route would be grasslands, with 369. The habitat type that would experience the greatest drop in average patch size by construction of the Proposed Route, Segment 1E is forest/woodlands, with a decrease of 416 acres. The habitat types that would be least affected by fragmentation by construction of the Proposed Route along Segment 1E are riparian/wetland and agriculture/disturbed. Alternative 1E-A would result in a similar number of patches as the comparison portion of the Proposed Route in all habitat types, but would decrease the average size of remaining patches over the Proposed

Route in shrublands, grasslands, and riparian/wetland. Average patch size would be bigger than along the comparison portion of the Proposed Route under Alternative 1E-A in forest/woodlands, and agriculture/disturbed. Alternative 1E-B would result in smaller average patch size than the comparison portion of the Proposed Route only in agriculture/disturbed. It would create more patches than the comparison portion of the Proposed Route would in forest/woodland, grassland, and agriculture/disturbed. Alternative 1E-C would cause less fragmentation than the comparison portion of the Proposed Route in all five habitat types except for grasslands. Alternative 1E-B would result in the smallest decrease in average remaining patch size as compared to the comparison portion of the Proposed Route, while Alternative 1E-A would result in the smallest increase in patch counts.

Big Game

For winter range for all four species impacted by this segment, Alternative 1E-A would decrease or have no effect on the number of acres impacted during construction and operations compared to the Proposed Route. Alternative 1E-B would either increase or have no effect on the amount impacted during construction and operations. Alternative 1E-C would decrease the amount of winter range impacted of all four species during construction and operations. The selection of Alternative 1E-C would have the least impact on big game winter range compared to the Proposed Route and the other two Route Alternatives.

Raptors

Alternative 1E-A would pass within 1 mile of a bald eagle nest that the comparison portion of the Proposed Route would not. Alternative 1E-B would pass near an additional prairie falcon nest. Alternatives 1E-A and 1E-B would both avoid the two northern goshawk nests. Alternative 1E-C would not impact the seven golden eagle nests and would pass within 1 mile of seven fewer raptor nests total than the comparison portion of the Proposed Route. Thus, selection of Alternative 1E-C would disturb the fewest nesting raptors.

Fish

The selection of Alternative 1E-A would not affect the number of stream crossings or riparian habitat cleared compared to the comparison portion of the Proposed Route. The selection of Alternative 1E-B would increase the number of crossings by three and would increase the amount of riparian habitat cleared compared to the Proposed Route. Alternative 1E-C would decrease impacts to fish and riparian habitat, eliminating three stream crossings and reducing the amount of riparian habitat that would be cleared by 5 acres. Therefore, out of the Proposed Route and the three Route Alternatives, Alternative 1E-C would likely have the least impacts on fish.

Segment 1W

Segment 1W is composed of two parts, Segment 1W(a) and 1W(c), both of which would consist of a new 230-kV line for part of their length and a reconstruction of an existing 230-kV line for the remaining part. Segment 1W(a) would be about 76.5 miles long, and would extend from the Windstar Substation to the Aeolus Substation. Segment 1W(c) would be about 70.6 miles long, and would extend from the Dave Johnson Power Plant

to the Aeolus Substation. Alternative 1W-A is a 16.2-mile alternative located near the town of Glenrock, which was the Proponents' initial proposal before moving the Proposed Route at the suggestion of local landowners in order to avoid the more settled area around Glenrock. Twenty acres of the proposed expansion at the Windstar and Aeolus Substations are attributed to Segment 1W(a) and 3 acres of the expansion at the Heward Substation and 17 acres of the expansion at the Windstar and Aeolus Substations are attributed to Segment 1W(c). There are no Route Alternatives proposed south of that point (see Appendix A, Figure A-2). The most common habitat along the Proposed Route is shrubland (74 percent for 1W[a] and 82 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 Proposed Route would be 413 acres for 1W(a) and 458 acres for 1W(c). Of those acres, 65 along 1W(a) and 66 along 1W(c) are federal, all administered by the BLM. Alternative 1W(a) would impact 136 acres of winter range, 62 acres less than the comparison portion of the Proposed Route. There is no parturition or summer habitat mapped for any big game species along this segment (Table 3.10-10).

Table 3.10-10. Big Game Designated Winter Range Impacted by Segments 1W(a) and 1W(c) Proposed Routes and Alternative 1W-A During Construction (acres)

Segment or Alternative	Length (miles)	Mule Deer		Pronghorn		Elk		Total ^{1/}	
		Total	Federal	Total	Federal	Total	Federal	Total	Federal
Proposed – 1W(a) Total Length	76.5	389	49	285	11	38	42	413	65
Proposed – Comparison Portion for Alternative 1W-A	20.3	190	t ^{2/}	173	–	–	t ^{2/}	198	t^{2/}
Alternative 1W-A	16.2	136	0	117	–	–	–	136	–
Proposed – 1W(c) Total Length	70.6	433	49	310	5	59	44	458	66

1/ Totals given have taken any overlap among winter range for different species taken into account so that the total number of acres impacted is reported.

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

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

Raptors

The Proposed Route of Segment 1W would pass within 1 mile of four ferruginous hawk nests, one prairie falcon nest, and one northern goshawk nest currently documented (Table 3.10-11). Of the nests on federal land shown in Table 3.10-11, 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 2010c). The Medicine Bow Forest Plan has standards regarding the amount of vegetation that can be removed in occupied northern goshawk territories and about characteristics and size of post-fledging area that must be maintained within occupied territories. The Project as currently proposed would not meet these standards. Within the Medicine Bow-Routt NFs, the Proposed Route of Segment 1W(a) would impact 9 acres within 1 mile of

northern goshawk nests, and the Proposed Route of Segment 1W(c) would impact 7 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 3.10-11. Comparison of Raptor Nests within 1 mile of Segment 1W(a) and 1W(c) Proposed Routes and Alternative 1W-A, Showing How Many are on Federal Land, if any

Segment or Alternative	Total Nests	Number of Nests (number on federal land)			
		Bald Eagle	Ferruginous Hawk	Prairie Falcon	Northern Goshawk
Proposed – 1W(a) Total Length	6 (5)	–	4 (3)	1 (1)	1 (1)
Proposed – Comparison Portion for Alternative 1W-A	–	–	–	–	–
Alternative 1W-A	1	1	–	–	–
Proposed – 1W(c) Total Length	7 (5)	1	4 (3)	1 (1)	1 (1)

Fish

There would be a total of four stream crossings along the two subsegments of Segment 1W. Of the riparian vegetation cleared that is on federal land, less than an acre along the Proposed Route for Segment 1W(a) and 1W(c) is on NFS land. Table 3.10-12 compares the Proposed Route and Route Alternatives along Segment 1W in regard to construction impacts to fish resources.

Table 3.10-12. Comparison of Stream Crossings (and the number on federal land, if any) and Acres of Riparian Clearing During Construction for Proposed Segments 1W(a) and 1W(c) and Alternative 1W-A (and the amount on federal land, if any)

Segment or Alternative	Number of Stream Crossings	Acres of Riparian Habitat Cleared ^{1/}
Proposed – 1W(a) Total Length	2 (2)	4 (<1)
Proposed – Comparison Portion for Alternative 1W-A	–	<1
Alternative 1W-A	–	2
Proposed – 1W(c) Total Length	2 (1)	7 (1)

1/ Acreages are rounded to nearest whole acre.

Operations

Habitat Fragmentation

Table 3.10-13 presents the habitat fragmentation in Segment 1W.

Table 3.10-13. Habitat Fragmentation from Roads and Transmission Lines by Habitat Type for Segment 1W

Segment or Alternative	Forest/ Woodlands		Shrublands		Grasslands		Riparian/ Wetland		Agriculture/ Disturbed	
	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}
Proposed – 1W(a) Total Length	-345	128	-52	199	-112	456	-16	31	-22	25
Proposed – Comparison Portion for Alternative 1W-A	-280	17	-36	63	-63	182	-15	28	-25	25
Alternative 1W-A	-182	17	-51	62	-58	194	-25	25	-25	25
Proposed – 1W(c) Total Length	-316	128	-58	193	-114	462	-24	28	-27	25

1/ The difference between average patch size following construction.
 2/ The number of additional fragments created as a result of the Project.
 Acreages are rounded to nearest whole 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 3.10-14. There would be 117 acres of mule deer winter range, 84 acres of pronghorn winter range, and 11 acres of elk winter range affected long-term by the Proposed Route during operations. 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 123 acres by 1W(a) and 86 acres by 1W(c). Of those acres, 10 acres along the Proposed Route for 1W(a) and 12 acres along 1W(c) are federally owned, all managed by the BLM.

Table 3.10-14. Acres of Big Game Designated Winter Range Affected by Project Operations in the Proposed Routes of Segments 1W(a) and 1W(c) and Alternative 1W-A

Segment or Alternative	Mule Deer		Pronghorn		Elk		Total ^{1/}	
	Total	Federal	Total	Federal	Total	Federal	Total	Federal
Proposed – 1W(a) Total Length	117	16	84	12	11	3	123	21
Proposed – Comparison Portion for Alternative 1W-A	42	t ^{2/}	38	t ^{2/}	-	-	44	t ^{2/}
Alternative 1W-A	40	-	34	-	-	-	40	-
Proposed – 1W(c) Total Length	79	8	62	9	10	2	86	12

1/ Totals given have taken any overlap among winter range for different species taken into account so that the total number of acres impacted is reported.
 2/ t = a trace amount (less than 0.1 acre)
 Acreages 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 345 acres, and the greatest increase in number of patches would be in grasslands, with 456 patches. On 1W(c), the biggest reduction in average patch size would also be in forest/woodlands, with a decrease of 316 acres, and the greatest number of new patches created would be in grasslands, with 462. Selection of Alternative 1W-A would have a similar effect on fragmentation of the various habitat types as the comparison portion of the Proposed Route.

Big Game

The selection of Alternative 1W-A would affect less designated mule deer and pronghorn winter range during both construction and operations than the comparison portion of the 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), Alternative 1W-A would have less total effects than the comparison portion of the Proposed Route.

Raptors

The selection of Alternative 1W-A would add one bald eagle nest that would be impacted; therefore, the Proposed Route would impact the fewest nesting raptors.

Fish

The selection of Alternative 1W-A would increase the amount of riparian vegetation that would be removed compared to the comparison portion of the Proposed Route. In regard to fish resources, the Proposed Route for 1W(a) and 1W(c) would have the same impacts as the alternatives.

Segment 2

Segment 2, as proposed, would link the Aeolus and Creston Substations in southeast Wyoming with two 500-kV circuits on one structure. One circuit would be operated at 230 kV during the initial phase of the Project. Its total proposed length is 96.7 miles. Fifty-two acres of the expansion of the Aeolus Substation and the construction of the Creston Substation and 0.5 acre for one regeneration site are attributed to Segment 2. There are three Route Alternatives, two of which are near the community of Fort Fred Steele. Alternative 2A at 28.4 miles long is being considered by the BLM because it remains in the WWE corridor nearer the town and the state historic site, and Alternative 2B, at 6.2 miles, is closer to the community than the comparison portion of the Proposed Route and was the initially proposed route before the Proponents responded to local suggestions and relocated the Proposed Route farther to the south. Alternative 2C is a 24.4-mile alternative located north of Hanna, Wyoming. It is being evaluated at the recommendation of the Wyoming Governor's office to follow a utility corridor approved by that office for minimizing effects to sage-grouse (see Appendix A, Figure A-3). Segment 2 lies on mostly flat topography, crossing the Continental Divide. The most common habitat type along the Proposed Route is shrubland (94 percent).

Construction

Big Game

Segment 2 would impact 1,335 acres of winter range for pronghorn, 1,201 acres for mule deer, 257 acres for elk, and 206 acres for moose. Because these habitat designations partially overlap, the Proposed Route centerline would actually impact 1,484 acres of winter range, 558 of which are federal lands administered by the BLM. Neither the Proposed Route nor the Route Alternatives pass through mapped parturition or summer habitat for any big game species. Table 3.10-15 compares Segment 2 against Alternatives 2A through 2C in regard to impacts on big game winter range.

Table 3.10-15. Comparison of Designated Winter Range Impacted by the Segment 2 Proposed Route and Alternatives 2A through 2C During Construction (acres)

Segment or Alternative	Length (miles)	Mule Deer		Pronghorn		Elk		Moose		Total ^{1/}	
		Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal
Proposed – Total Length	96.7	1,201	443	1,335	511	257	71	206	70	1,484	558
Proposed – Comparison Portion for Alternative 2A	28.8	227	75	308	105	208	55	157	54	398	121
Alternative 2A	28.4	157	51	444	145	29	16	32	17	444	145
Proposed – Comparison Portion for Alternative 2B	7.0	104	54	104	54	–	–	44	25	104	54
Alternative 2B	6.2	57	21	80	28	–	–	2	1	80	28
Proposed – Comparison Portion for Alternative 2C	28.4	158	65	198	73	237	55	141	30	309	101
Alternative 2C	24.4	133	43	278	124	t ^{2/}	t ^{2/}	t ^{2/}	t ^{2/}	322	134

1/ Totals given have taken any overlap among winter range for different species taken into account so that the total number of acres impacted is reported.

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 2 American kestrel nests, 3 burrowing owl nests, 79 ferruginous hawk nests, 19 golden eagle nests, 2 northern harrier nests, 3 prairie falcon nests, 8 red-tailed hawk nests, and 4 Swainson’s hawk nests. Table 3.10-16 presents the Proposed Route with Alternatives 2A and 2B for proximity to raptor nests.

Table 3.10-16. Comparison of Raptor Nests within 1 Mile of the Segment 2 Proposed Route and Alternatives 2A through 2C, Showing How Many are on Federal Land, if any

Segment or Alternative	Total Nests	Number of Nests (number on federal land)								
		American kestrel	Bald eagle	Burrowing owl	Ferruginous Hawk	Golden eagle	Northern harrier	Prairie falcon	Red-tailed hawk	Swainson's hawk
Proposed – Total Length	120 (43)	2 (1)	0	3 (2)	79 (31)	19 (6)	2 (1)	3 (1)	8 (1)	4
Proposed – Comparison Portion for Alternative 2A	20 (4)	-	-	-	10 (3)	6	-	-	2 (1)	2
Alternative 2A	15 (1)	1 (1)	2	-	6	4	-	-	2	-
Proposed – Comparison Portion for Alternative 2B	7 (3)	-	-	-	5 (2)	-	-	-	2 (1)	-
Alternative 2B	5	-	2	-	1	-	-	-	2	-
Proposed – Comparison Portion for Alternative 2C	33 (15)	-	-	-	19 (13)	7 (2)	1	-	2	4
Alternative 2C	47 (17)	2 (2)	-	-	19 (7)	10 (2)	2	4 (1)	8 (4)	2 (1)

Fish

The Proposed Route of Segment 2 would include nine stream crossings. However, none of the Route Alternatives would have stream crossings. Riparian ROW clearing along the Proposed Route would impact 7 acres during construction, 3 acres of which would be kept clear during operations. Table 3.10-17 compares the Segment 2 Proposed Route with Alternatives 2A through 2C in regard to construction impacts to fish resources. Federal land from which riparian habitat would be cleared is all administered by the BLM.

Table 3.10-17. Comparison of Acres of Permanent Riparian Clearing for Proposed Segment 2 and Alternatives 2A through 2C (and the amount on federal land, if any)

Segment or Alternative	Acres of Riparian Habitat Cleared
Proposed – Total Length	7 (1)
Proposed – Comparison Portion for Alternative 2A	1 (<1)
Alternative 2A	8 (<1)
Proposed – Comparison Portion for Alternative 2B	<1 (<1)
Alternative 2B	6
Proposed – Comparison Portion for Alternative 2C	2 (<1)
Alternative 2C	<1

Acreages are rounded to nearest whole acre.

Operations

Habitat Fragmentation

Table 3.10-18 presents the comparison portion of Segment 2 with Alternatives 2A, 2B, and 2C for habitat fragmentation from proposed roads and the transmission line.

Table 3.10-18. Comparison of Habitat Fragmentation from Roads and Transmission Lines by Habitat type for the Segment 2 Proposed Route and Alternatives 2A through 2C

Segment or Alternative	Forest/ Woodlands		Shrublands		Grasslands		Riparian/ Wetland		Agriculture/ Disturbed	
	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}
Proposed – Total Length	-	-	-77	357	-93	45	-14	14	-	-
Proposed – Comparison Portion for Alternative 2A	-	-	-56	200	-	-	-12	11	-	-
Alternative 2A	-	-	-52	207	-	-	-12	11	-	-
Proposed – Comparison Portion for Alternative 2B	-	-	-67	72	-	-	-8	6	-	-
Alternative 2B	-	-	-66	72	-	-	-8	6	-	-
Proposed – Comparison Portion for Alternative 2C	-	-	-55	183	-	-	-31	6	-	-
Alternative 2C	-	-	-68	167	-	-	-18	1	-	-

1/ The difference between average patch size following construction.

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

Acres are rounded to nearest whole acre.

Big Game

There would be operations impacts to winter range for mule deer, pronghorn, elk, and moose by the 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 Proposed Route is 387 acres, 139 of which are federally owned, all by the BLM. Table 3.10-19 compares Segment 2 against Alternatives 2A through 2C in regard to impacts on big game winter range.

Table 3.10-19. Acres of Big Game Designated Winter Range Affected by Project Operations of the Segment 2 Proposed Route and Alternatives 2A through 2C

Segment or Alternative	Mule Deer		Pronghorn		Elk		Moose		Total ^{1/}	
	Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal
Proposed – Total Length	304	99	351	129	47	11	34	9	387	139
Proposed – Comparison Portion for Alternative 2A	43	14	53	17	39	9	27	7	74	21
Alternative 2A	36	11	89	28	<1	-	2	<1	89	28
Proposed – Comparison Portion for Alternative 2B	16	9	16	9	-	-	8	4	16	9

Table 3.10-19. Acres of Big Game Designated Winter Range Affected by Project Operations of the Proposed Route of Segment 2 and Alternatives 2A through 2C (continued)

Segment or Alternative	Mule Deer		Pronghorn		Elk		Moose		Total ^{1/}	
	Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal
Alternative 2B	12	4	18	6	–	–	1	<1	18	6
Proposed – Comparison Portion for Alternative 2C	33	12	37	13	47	11	26	5	63	20
Alternative 2C	22	8	45	20	t ^{2/}	t ^{2/}	t ^{2/}	t ^{2/}	52	22

1/ Totals given have taken any overlap among winter range for different species taken into account so that the total number of acres impacted is reported.

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

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

Conclusions

Habitat Fragmentation

The 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 fragmented. The selection of Alternative 2A, 2B, or 2C would have similar effects on habitat fragmentation as the comparison portion of the Proposed Route. Fragmentation of forest/woodlands and agriculture/disturbed would not occur under any alternative. Fragmentation of grassland would be the same regardless of which alternative is chosen. Fragmentation of shrublands and riparian/wetland would be similar regardless of which alternative is chosen.

Big Game

For mule deer, elk, and moose, the selection of any of the Route Alternatives would decrease the amount of designated winter range impacted during both construction and operations compared to the Proposed Route. For pronghorn, impacts would increase under all Route Alternatives during operations (even though construction-related impacts would be less if Alternative 2B is selected). In regard to total impacts to big game winter range for all species combined, the selection of Alternative 2C would result in the biggest decrease in operations impacts compared to the Proposed Route.

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 Proposed Route. Alternative 2A would pass within 1 mile of five fewer nests than the comparison portion of the Proposed Route, while Alternative 2B would pass near two fewer nests.

Fish

Alternatives 2A and 2B would increase the amount of riparian vegetation that would be removed over the comparison portion of Segment 2, while Alternative 2C would result in a reduction in the amount cleared.

Segment 3

Segment 3, as proposed, would link the Creston and Anticline Substations in southeast Wyoming with two 500-kV circuits on one structure. One circuit would be operated at 230 kV during the initial phase of the Project. Its total proposed length between those two substations is 46.7 miles. Sixty-nine acres of the construction of the Anticline and Creston Substations are attributed to Segment 3. Segment 3 would also link the Anticline and Jim Bridger Substations with a 4.3-mile 230-kV line and a 5.5-mile 345-kV line and includes the 10-acre expansion of the Jim Bridger 345-kV Substation. There are no Route Alternatives proposed along this segment (see Appendix A, Figure A-4). Segment 3 also lies along mostly flat land and crosses the Continental Divide again. The dominant habitat type along the Proposed Route is shrubland (96 percent).

Construction

Big Game

Segment 3 would pass through habitats used by various big game species throughout the year. In addition, the Proposed Route along Segment 3 would impact 863 acres of winter range for pronghorn. It would also impact 625 acres of mule deer winter range, all of which overlaps pronghorn range, resulting in a total of 863 acres of big game winter range impacted, 415 of which are federal lands administered by the BLM. There is no parturition or summer habitat identified along Segment 3 for any big game species.

Raptors

Construction of Segment 3 would occur within 1 mile of 1 American kestrel nest, 2 burrowing owl nests (both on federal land), 9 ferruginous hawk nests (6 on federal land), 8 golden eagle nests (7 on federal land), 1 northern harrier nest (on federal land), 12 prairie falcon nests (8 on federal land), and 3 red-tailed hawk nests (3 on federal land) currently documented, for a total of 36 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, Segment 3 would lie within 0.5 mile of known raptor nests within this management unit. If any of these nests are active at the time of construction, an amendment to the Green River RMP would be needed (see Appendix F-1). The requested amendment would be "Allow the Gateway West Transmission Line Project within 0.5 miles of active raptor nests, with appropriate mitigation measures." Additional mitigation would include micro-siting of the route and towers and adherence to seasonal closures unless an exception is granted by the Agency. The impacts of this amendment, if accepted, 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 two stream crossings proposed for Segment 3 (three on BLM-managed land and three on private land), and a total of 8 acres of riparian vegetation would be cleared for construction. Of these 8 acres, 1 are on federal land, administered by the BLM. During operations, 1 acre of riparian vegetation would remain cleared (Tables D.9-1 and D.9-2 in Appendix D).

Operations

Habitat Fragmentation

The only habitat type that would be fragmented by Segment 3 is shrublands, where the average patch size would decrease by 126 acres, and 202 new patches would be created.

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 169 acres of mule deer winter range and 219 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 Proposed Route is 219 acres. Of those, 90 acres consist of federally administered lands, all by the BLM.

Segment 4

Segment 4, as proposed, would link the Anticline Substation near the Jim Bridger Power Plant in southwestern Wyoming with the Populus Substation in Idaho with two 500-kV circuits on one structure. Its total proposed length is 203 miles. Eighty-nine acres of the construction of the Anticline Substation and the expansion of the Populus Substation and 1.5 acres for three regeneration sites are attributed to Segment 4. It has six Route Alternatives in the middle portion of its route but 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 is 90.2 miles long, and its Route Alternatives vary from 85 to 102 miles long. These Route Alternatives were proposed by the Wyoming Governor's office (4A, paralleling the existing 345-kV lines throughout); by the BLM Kemmerer FO (4B through 4E, including edits from various cooperating agencies), with the intent to minimize wildlife and visual impacts; and by the Proponents (4F, attempting to avoid impacts to cultural resources while still remaining north of the existing lines) (see Appendix A, Figures A-5 and A-6). This segment is near Seedskaadee NWR, Cokeville Meadows NWR, and Bear Lake NWR, and also runs through Caribou-Targhee NFs and near Bridger National Forest. The dominant habitat type along the Proposed Route is shrubland (73 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 Proposed Route is 2,226 acres. Of these acres, 997 are on federal land, with 28 of those acres in the Caribou-Targhee NFs. The Proposed Route of Segment 4 would also impact 99 acres of elk parturition area, all along the comparison portion. Of these 99 acres, 69 are on federal land, administered by the BLM. Alternative 4A would affect 131 acres of elk parturition habitat, while Alternative 4F would affect 148 acres; the other Route Alternatives would not affect this type of habitat.

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

Table 3.10-20. Comparison of Designated Winter Range Impacted by the Segment 4 Proposed Route and Alternatives 4A through 4F (acres)

Segment or Alternative	Length (miles)	Mule Deer		Moose		Pronghorn		Elk		Total ^{1/}	
		Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal
Proposed – Total Length	203.0	1,337	466	307	198	1,083	579	791	519	2,226	997
Proposed – Comparison Portion for Alternatives 4A,B,C,D,E,F	90.2	445	286	307	198	338	254	539	423	888	579
Alternative 4A	85.2	262	109	378	174	406	224	296	125	788	388
Alternative 4B	100.2	636	331	71	<1	355	99	551	296	920	424
Alternative 4C	101.6	639	296	210	68	345	132	545	261	914	389
Alternative 4D	100.8	640	324	78	4	352	100	546	281	921	417
Alternative 4E	102.2	640	300	210	68	346	133	539	255	914	392
Alternative 4F	87.5	229	65	352	208	317	180	195	79	793	430

1/ Totals given have taken any overlap among winter range for different species taken into account so that the total number of acres impacted is reported.

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

Raptors

Segment 4 would pass within 1 mile of 51 currently documented raptor nests: 1 American kestrel, 1 bald eagle, 5 common raven, 13 ferruginous hawk, 4 golden eagle, 4 northern goshawk, 2 northern harrier, 9 prairie falcon, 11 red-tailed hawk, and 1 Swainson’s hawk. The northern goshawk nests and one of each of the red-tailed hawk nests in Table 3.10-21, below, are on NFS land. Table 3.10-21 compares Segment 4 against Alternatives 4A through 4C in regard to the number of raptor nests within a mile.

Table 3.10-21. Comparison of Raptor Nests within 1 Mile of the Proposed Route and Route Alternatives, Segment 4 Proposed Route and Alternatives 4A through 4F, and How Many are on Federal Land, if any

Segment or Alternative	Total Nests	Number of Nests (number on federal land)										
		American kestrel	Bald eagle	Burrowing owl	Common raven	Ferruginous hawk	Golden eagle	Northern goshawk	Northern harrier	Prairie falcon	Red-tailed hawk	Swainson’s hawk
Proposed – Total Length	51 (25)	1	1		5 (2)	13 (7)	4 (3)	4 (4)	2 (2)	9 (4)	11 (3)	1
Proposed – Comparison Portion for Alternatives 4A–F	9 (7)	1	–		–	4 (4)	–	–	–	–	3 (3)	1
Alternative 4A	12 (7)	1	–	–	–	2 (2)	4 (2)	–	–	1	3 (3)	1
Alternative 4B	19 (12)	1	–	1 (1)	2 (2)	–	6 (1)	–	–	1	6 (6)	1
Alternative 4C	19 (12)	1	–	1 (1)	2 (2)	–	6 (1)	–	–	2	6 (6)	1

Table 3.10-21. Comparison of Raptor Nests within 1 mile of the Proposed Route and Route Alternatives, Segment 4 Proposed Route and Alternatives 4A through 4F, and How Many are on Federal Land, if any (continued)

Segment or Alternative	Total Nests	Number of Nests (number on federal land)										
		American kestrel	Bald eagle	Burrowing owl	Common raven	Ferruginous hawk ^{1/}	Golden eagle	Northern goshawk	Northern harrier	Prairie falcon	Red-tailed hawk	Swainson's hawk
Alternative 4D	19 (12)	1	–	1 (1)	2 (2)	–	6 (1)	–	–	2	6 (6)	1
Alternative 4E	19 (12)	1	–	1 (1)	2 (2)	–	6 (1)	–	–	2	6 (6)	1
Alternative 4F	11 (6)	1	–	–	–	2 (2)	4 (2)	–	–	1	2 (2)	1

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

Surveys for northern goshawks and flammulated owls on Medicine Bow-Routt NFs during 2010 found no territorial birds or active nests (Tetra Tech 2010d). 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 Proposed Route of Segment 4, as well as all of its Route Alternatives, would lie within 0.5 mile of 40 known raptor nests within the Rock Springs FO. If any of these nests are active at the time of construction, an amendment to the Green River RMP would be needed.

Fish

A total of 18 stream crossings are proposed for Segment 4. Of the crossings that would be on federal land, 5 are on NFS lands. Construction would impact 20 acres of riparian areas along the Proposed Route, of which 6 acres would be kept clear during operations. Of the riparian vegetation on federal land that would be cleared, 0.2 acre along the Proposed Route is on NFS land. Table 3.10-22 compares the Proposed Route of Segment 4 with Alternatives 4A through 4F with regard to construction impacts to fish resources.

Table 3.10-22. Comparison of Stream Crossings (and the number on federal land, if any) and Acres of Riparian Clearing during Construction for the Segment 4 Proposed Route and Alternatives 4A through 4F (and the amount on federal land, if any)

Segment or Alternative	Number of Stream Crossings	Acres of Riparian Habitat Cleared ^{1/}
Proposed – Total Length	18 (11)	20 (2)
Proposed – Comparison Portion for Alternatives 4A,B,C,D,E,F	3 (2)	7 (<1)
Alternative 4A	10 (5)	28 (3)
Alternative 4B	5	22 (<1)
Alternative 4C	4	21 (1)
Alternative 4D	5	21 (1)
Alternative 4E	4	21 (2)
Alternative 4F	18 (13)	26 (3)

1/ Acreages are rounded to nearest whole acre.

Operations

Habitat Fragmentation

Table 3.10-23 presents the comparison portion of Segment 4 with Alternatives 4A through 4F for habitat fragmentation from proposed roads and the transmission line.

Table 3.10-23. Comparison of Habitat Fragmentation from Roads and Transmission Lines by Habitat Type for the Segment 4 Proposed Route and Alternatives 4A through 4F

Segment or Alternative	Forest/ Woodlands		Shrublands		Grasslands		Riparian/ Wetland		Agriculture/ Disturbed	
	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}
Proposed – Total Length	-11	119	-45	544	< -1	32	-3	39	-19	76
Proposed – Comparison Portion for Alternatives 4A,B,C,D,E	-248	32	-103	276	< -1	2	-9	10	-22	26
Alternative 4A	-35	14	-85	269	< -1	2	-16	14	-27	33
Alternative 4B	–	–	-103	317	< -1	2	-14	21	-25	22
Alternative 4C	–	–	-105	325	< -1	2	-16	23	-36	36
Alternative 4D	–	–	-102	317	< -1	2	-14	21	-25	22
Alternative 4E	–	–	-105	325	< -1	2	-16	23	-36	36
Alternative 4F	-93	27	-79	254	< -1	2	-12	11	-23	28

1/ The difference between average patch size following construction.

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

Acres are rounded to nearest whole 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 Proposed Route during operations is 487. Operations occupancy of elk parturition range would be 24 acres along the Proposed Route (all along the comparison portion for the Route Alternatives, 16 acres of which is federally owned), 39 acres along Alternative 4A (27 acres of which is federally owned), and 46 acres along Alternative 4F (36 acres of which is federally owned). All federally managed parturition range along the Segment 4 Proposed Route and its Route Alternatives is BLM-administered.

Table 3.10-24 compares Segment 4 against Alternatives 4A through 4F in regard to impacts on big game winter range.

Table 3.10-24. Acres of Big Game Designated Winter Range Affected by Operations, Segment 4 Proposed Route and Alternatives 4A through 4F

Segment or Alternative	Mule Deer		Pronghorn		Moose		Elk		Total ^{1/}	
	Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal
Proposed – Total Length	310	91	254	106	70	45	169	107	487	196
Proposed – Comparison Portion for Alternatives 4A,B,C,D,E,F	92	56	59	46	70	45	116	89	183	118
Alternative 4A	63	28	85	49	89	50	72	35	175	94
Alternative 4B	143	75	76	21	12	<1	121	69	205	96
Alternative 4C	138	66	76	30	41	15	114	59	199	86
Alternative 4D	149	82	77	21	12	<1	125	73	212	102
Alternative 4E	142	71	77	30	41	15	116	62	203	91
Alternative 4F	48	12	64	38	85	55	43	20	174	98

1/ Totals given have taken any overlap among winter range for different species taken into account so that the total number of acres impacted is reported.

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

The Kemmerer RMP does not allow an average of more than 2 miles of open road per square mile on big game winter range. After the Project is built, road densities would rise above 2 miles per square mile in one big game winter range area along the Proposed Route of Segment 4 around and to the west of the town of Fontenelle, Wyoming. The current road density is 2.0 miles per square mile; during Project operations it would be 2.1 miles of open road per square mile.

Where Segment 4 crosses the Caribou-Targhee NF, the effects on road density from the Project have been calculated. Table 3.10-25 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 3.10-25. Road Densities along the Proposed Route of Segment 4 on Forest Service 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	0.2	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 Proposed Route would result in increased fragmentation in all five habitat types over current levels. It would have the greatest effect in shrublands, where the average patch size would decrease by 45 acres and there would be 544 additional patches on the landscape. The smallest effect would be in grassland, where the average patch size would decrease by only 1 acre, and 32 additional patches would be created. Of the six Route Alternatives, only 4A and 4F would have an effect on fragmentation of forest/woodlands, fragmenting this habitat type less than the comparison portion of the Proposed Route. Alternatives 4A and 4F would fragment the shrublands habitat type less than the Proposed Route, while Alternatives 4B through 4E would fragment this habitat type more than the Proposed Route. Fragmentation of grasslands would be equal and minimal under the 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 more under any of the Route Alternatives compared to the Proposed Route, with Alternatives 4B through 4E more than doubling the number of patches that would be created along the comparison portion of the Proposed Route. Agriculture/disturbed would also experience similar levels of fragmentation regardless of whether the Proposed Route or any of the Route Alternatives is chosen. Alternatives 4B, 4C, 4D, and 4E would result in a higher degree of fragmentation than the Proposed Route within shrublands; however, Alternatives 4B, 4C, 4D, and 4E would avoid fragmenting forested habitat types, which take longer to recover. Regarding habitat fragmentation along Segment 4, there is no choice that would have the most favorable effect overall among the six Route Alternatives or the Proposed Route.

Big Game

For mule deer, Alternatives 4A and 4F would result in decreased construction and operations impacts to winter range compared to the Proposed Route, while Alternatives 4B through 4E would increase the amount of impacts. For moose, Alternatives 4A and 4F would increase the impacts compared to the Proposed Route, while Alternatives 4B through 4E would decrease impacts for both construction and operations. All Route Alternatives would increase the amount of pronghorn winter range impacted (except construction impacts from Alternative 4F, which would decrease). Impacts to elk winter range during operations would decrease under Alternatives 4A, 4C, and 4F and increase under Alternatives 4B or 4D. Under Alternative 4E, construction-related impacts would decrease but operations effects would not change compared to the Proposed Route. Pooling all four big game species, the alternative that would impact the fewest acres of winter range during construction is Alternative 4A, and Alternative 4F would impact the fewest acres during operations.

Raptors

Selection of Alternatives 4A through 4F would increase the number of raptor nests within 1 mile of the Project, potentially increasing the number of nesting raptors that would be disturbed and experience other impacts, compared to the Proposed Route. Alternatives 4B through 4E would have the greatest impacts, being located within 1 mile of 19 raptor nests each, while Alternative 4A would be near only 12 nests and 4F only 11 nests. The

species that would be affected under each Route Alternative vary slightly. Alternatives 4B through 4E would impact more common ravens, golden eagles, prairie falcons, and red-tailed hawks than the comparison portion of the Proposed Route. Alternatives 4A and 4F would avoid the burrowing owl nest and three of the ferruginous hawk nests, as well as impact fewer golden eagles.

Fish

All of the Route Alternatives would increase the number of stream crossings and the amount of riparian habitat cleared compared to the Proposed Route. The greatest increases in impacts compared to the Proposed Route would be under Alternatives 4A and 4F. Alternative 4F would result in the most streams crossed, and Alternative 4A would result in the greatest amount of riparian habitat being cleared. Regarding impacts on fish resources, the Proposed Route would have the least impacts.

Segment 5

Segment 5, as proposed, would link the Populus and Borah Substations with a 54.6-mile single-circuit 500-kV line. Forty-four acres of the expansion of the Populus and Borah Substations are attributed to Segment 5. There are five Route Alternatives including two proposed by the BLM to avoid the Deep Creek Mountains (5A and 5B; 8 miles and 19 miles longer than the comparison portion of the Proposed Route), one preferred by Power County that crosses the Fort Hall Indian Reservation (5C; 6 miles shorter than the comparison portion of the Proposed Route), one originally proposed by the Proponents (5D; 2 miles shorter than the comparison portion of the Proposed Route but located within more agricultural lands), and one proposed by Power County as an alternative approach to the Borah Substation (5E) (see Appendix A, Figure A-7).

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 (45 percent).

Construction

Big Game

The Segment 5 centerline would pass through habitats used by various big game species throughout the year. In addition, Segment 5 would impact 532 acres of mule deer winter range and about 1 acre of elk winter range along its 55-mile length. Of these impact acres, 110 are on federal land administered by the BLM. Table 3.10-26 compares Segment 5 against Alternatives 5A through 5E in regard to impacts on big game winter range.

Table 3.10-26. Comparison of Designated Winter Range Impacted by the Segment 5 Proposed Route and Alternatives 5A through 5E (acres)

Segment or Alternative	Total Miles	Mule Deer		Elk		Total ^{1/}	
		Acres	Federal	Acres	Federal	Acres	Federal
Proposed – Total Length	54.6	532	110	1	–	532	110
Proposed – Comparison Portion for Alternative 5A,B	25.3	151	52	1	–	152	52
Alternative 5A	33.7	221	58	–	–	221	58
Alternative 5B	44.4	321	73	–	–	321	73
Proposed – Comparison Portion for Alternative 5C	33.2	377	56	1	–	378	56
Alternative 5C	26.1	112	–	131	–	176	0
Proposed – Comparison Portion for Alternative 5D	19.4	311	39	–	–	311	39
Alternative 5D	17.5	279	1	–	–	279	1
Proposed – Comparison Portion for Alternative 5E	5.8	46	20	–	–	46	20
Alternative 5E	5.3	48	7	–	–	48	7

1/ Totals given have taken any overlap among winter range for different species taken into account so that the total number of acres impacted is reported.

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

Raptors

Segment 5 would pass within 1 mile of two currently documented bald eagle nests and one burrowing owl nest (on BLM-administered land). 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 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 raptors. 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.

Fish

No stream crossings are planned for the Proposed Route of Segment 5. Riparian ROW clearing would impact 6 acres during construction, less than 1 acre of which would be kept clear during operations. Table 3.10-27 compares the Proposed Route of Segment 5 with Alternatives 5A through 5E in regard to construction impacts to fish resources. All of the federal land from which riparian vegetation would be removed is administered by the BLM.

Table 3.10-27. Comparison of Stream Crossings (and the number on federal land, if any) and Acres of Riparian Clearing During Construction for the Segment 5 Proposed Route and Alternatives 5A through 5E (and the amount on federal land, if any)

Segment or Alternative	Number of Stream Crossings	Acres of Riparian Habitat Cleared ^{1/}
Proposed – Total Length	–	6 (<1)
Proposed – Comparison Portion for Alternatives 5A,B	–	2 (<1)
Alternative 5A	3	<1 (<1)

Table 3.10-27. Comparison of Stream Crossings (and the number on federal land, if any) and Acres of Riparian Clearing During Construction for the Segment 5 Proposed Route and Alternatives 5A through 5E (and the amount on federal land, if any) (continued)

Segment or Alternative	Number of Stream Crossings	Acres of Riparian Habitat Cleared ^{1/}
Alternative 5B	3 (3)	1 (<1)
Proposed – Comparison Portion for Alternative 5C	–	2
Alternative 5C	–	3
Proposed – Comparison Portion for Alternative 5D	–	3
Alternative 5D	–	8
Proposed – Comparison Portion for Alternative 5E	–	1
Alternative 5E	–	<1 (<1)

1/ Acreages are rounded to nearest whole acre.

Operations

Habitat Fragmentation

Table 3.10-28 presents the comparison portion of Segment 5 with Alternatives 5A through 5E with regard to habitat fragmentation from proposed roads and the transmission line.

Table 3.10-28. Comparison of Habitat Fragmentation from Roads and Transmission Lines by Habitat Type for the Segment 5 Proposed Route and Alternatives 5A through 5E

Segment or Alternative	Forest/ Woodlands		Shrublands		Grasslands		Riparian/ Wetland		Agriculture/ Disturbed	
	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{1/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}
Proposed – Total Length	-9	131	-19	324	-1	84	< -1	7	-37	192
Proposed – Comparison Portion for Alternatives 5A,B	-12	107	-34	219	-1	29	< -1	3	-81	112
Alternative 5A	-14	193	-48	332	-4	89	< -1	12	-99	140
Alternative 5B	-8	197	-61	447	-3	103	< -1	12	-116	184
Proposed – Comparison Portion for Alternative 5C	-10	118	-32	253	-1	57	< -1	3	-58	136
Alternative 5C	-1	44	-18	175	-1	61	< -1	3	-31	99
Proposed – Comparison Portion for Alternative 5D	-14	70	-19	143	-1	36	< -1	2	-48	83
Alternative 5D	-15	68	-18	138	-1	37	< -1	2	-54	78
Proposed – Comparison Portion for Alternative 5E	-2	11	-10	52	< -1	26	< -1	1	-24	46
Alternative 5E	-2	11	-10	50	< -1	26	< -1	1	-24	46

1/ The difference between average patch size following construction.

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

Acreages are rounded to nearest whole acre.

Big Game

Operations impacts along the Proposed Route for Segment 5 to mule deer winter range are estimated at 80 acres, and at less than 1 acre for elk winter range. Table 3.10-29 presents the amounts of deer and elk winter range impacted along the Proposed Route Segment 5 and Alternatives 5A through 5E during operations. Table 3.10-29 compares Segment 5 against Alternatives 5A through 5E in regard to impacts on big game winter range.

Table 3.10-29. Acres of Big Game Designated Winter Range Affected by Operations, Segment 5 Proposed Route and Alternatives 5A through 5E

Segment or Alternative	Mule Deer		Elk		Total ^{1/}	
	Total	Federal	Total	Federal	Total	Federal
Proposed – Total Length	80	18	<1	–	81	18
Proposed – Comparison Portion for Alternative 5A,B	30	12	<1	–	30	12
Alternative 5A	33	12	–	–	33	12
Alternative 5B	43	13	–	–	43	13
Proposed – Comparison Portion for Alternative 5C	60	10	<1	–	61	10
Alternative 5C	14	–	15	–	20	–
Proposed – Comparison Portion for Alternative 5D	43	4	–	–	43	4
Alternative 5D	30	<1	–	–	31	<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 taken into account so that the total number of acres impacted is reported.

Acres 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 agriculture/disturbed seeing the biggest decrease in average patch size, and shrubland seeing the biggest increase in number of patches. Compared to the Proposed Route, Alternative 5C would be the best option for minimizing fragmentation to forest/woodlands, shrublands, and agriculture/disturbed habitat types. Alternative 5C would also only minimally fragment grasslands and riparian/wetland, although Alternative 5D would be a very slight improvement over 5C. Alternative 5B would create the most fragmentation in general, compared to the Proposed Route and the other Route Alternatives. Selecting Alternative 5E would have little effect on the amount of fragmentation that would occur, compared to the Proposed Route.

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. Paradoxically, Alternative 5C would have the least impacts to mule deer winter range (a decrease of 46 acres during operations, or a 77 percent decrease from the comparison portion of the Proposed Route), but the most impacts on elk winter range (an increase from less than an acre to 15 acres during operations). Because of the very small amount of elk winter range affected, however, Alternative 5C would result in the least total impacts to big game winter range during

construction and operations compared to the Proposed Route and the other Route Alternatives, while Alternative 5B would have the greatest impacts.

Raptors

Based on the location of the three known raptor nests along this segment, the selection of any of the Alternatives 5A, 5B, 5C, or 5E would have the least impacts because it would avoid all three nests.

Fish

Selection of Alternative 5E would result in the least impact to fish and their habitat. Alternatives 5A and 5B have three stream crossings proposed, while the Proposed Route has none, although they would decrease the amount of riparian vegetation that would be removed by a few acres. Alternatives 5C and 5D would not affect the number of streams that would be crossed, but would both increase the amount of riparian vegetation that would be cleared.

Segment 6

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. Thirty-one acres of the expansion of the Borah and Midpoint Substations are attributed to Segment 6. Changes in the two substations would allow it to be operated at 500 kV (see Appendix A, Figure A-8).

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 miles of mule deer winter range, impacting 30 acres of this habitat designation during construction and 28 acres during operations, none of it on federal land. There are no known raptor nests within 1 mile of the proposed activities for Segment 6. No stream crossings or riparian vegetation clearing are proposed during construction or operations, and no habitat fragmentation is projected to occur.

Segment 7

Segment 7, as proposed, would link the Populus and Cedar Hill Substations with a 118.1-mile single-circuit 500-kV line. Forty-two acres of the expansion of the Populus and the construction of the Cedar Hill Substations and 1 acre for two regeneration sites are attributed to Segment 7. In addition to the Proposed Route, which is principally on private lands, Route Alternatives have been proposed by the BLM to avoid the Deep Creek Mountains (7A and 7B; which are 5 miles and 11 miles longer than the comparison portion of the Proposed Route), by local landowners (7C, 7D, 7E, 7F, and 7G, which all represent minor adjustments proposed to address local issues), by local landowners to avoid private agricultural lands (7I or the State Line Route, which is 55 miles longer than the Proposed Route and would require 0.5 acre for an additional regeneration site), and by the Proponents to avoid the State Line Route (7H, which is 10

miles longer than the Proposed Route). Alternative 7J, which is a variant of the State Line Route also proposed by local landowners, would not terminate at the Cedar Hill Substation. This alternative, referred to as the Rogerson Alternative, would require a different substation be constructed near a 345-kV existing transmission line (approximately 24 miles southwest of the Cedar Hill Substation; see Appendix A, Figure A-9). The tables and discussion in this document compare 7J (202 miles) with the corresponding portion of Segment 7/9 (118.1 miles of Segment 7 and 25.8 miles of Segment 9, for a total of 143.9 miles). All other Segment 7 alternatives are compared to Segment 7 of the Proposed Route (118.1 miles) only.

Construction

Big Game

Segment 7 would pass through habitats used by various big game species throughout the year. Segment 7 would impact 650 acres of winter range for mule deer along its 118-mile length. Of these 650 acres along the Proposed Route, 161 are on federal land, with less than 1 acre in the Caribou-Targhee NF. No designated winter habitat for bighorn sheep would be affected by the Proposed Route, only by Alternative 7H (with about 26 acres impacted along Alternative 7H). Alternatives 7I and 7J would impact 90 acres of elk summer range (83 of which are on federal land and less than an acre of which is on NFS land) and 19 acres of elk yearlong range in Nevada (all but 0.2 acre of which is on BLM-administered land). Alternatives 7I and 7J would also impact 34 acres of mule deer yearlong range (29 on federal land) and 3 acres of pronghorn summer range (less than an acre of which is on federal land). Table 3.10-30 compares Segment 7 against Alternatives 7A through 7J in regard to impacts on big game winter range.

Table 3.10-30 presents the Proposed Route of Segment 7 against Alternatives 7A through 7J for construction impacts to mule deer, elk, and bighorn sheep winter range.

Table 3.10-30. Comparison of Big Game Designated Winter Range Impacted during Construction by Proposed Segment 7 and Alternatives 7A through 7J (acres)

Segment or Alternative	Length (miles)	Bighorn Sheep		Mule Deer		Elk		Total ¹⁷	
		Total	Federal	Total	Federal	Total	Federal	Total	Federal
Proposed – Total Length	118.1	–	–	650	161	–	–	650	161
Proposed – Comparison Portion for Alternative 7A,B	35.2	–	–	221	43	–	–	221	43
Alternative 7A	38	–	–	130	40	–	–	130	40
Alternative 7B	46.4	–	–	179	49	–	–	179	49
Proposed – Comparison Portion for Alternative 7C	20.1	–	–	54	–	–	–	54	–
Alternative 7C	20.3	–	–	95	4	–	–	95	4

Table 3.10-30. Comparison of Big Game Designated Winter Range Impacted during Construction by Proposed Segment 7 and Alternatives 7A through 7J (acres) (continued)

Segment or Alternative	Length (miles)	Bighorn Sheep		Mule Deer		Elk		Total ^{1/}	
		Total	Federal	Total	Federal	Total	Federal	Total	Federal
Proposed – Comparison portion for Alternative 7D	6.2	–	–	32	–	–	–	32	–
Alternative 7D	6.8	–	–	32	–	–	–	32	–
Proposed – Comparison Portion for Alternative 7E	3.8	–	–	41	5	–	–	41	5
Alternative 7E	4.5	–	–	65	23	–	–	65	23
Proposed – Comparison Portion for Alternative 7F	10.5	–	–	140	23	–	–	140	23
Alternative 7F	10.8	–	–	160	68	–	–	160	68
Proposed – Comparison Portion for Alternative 7G	3.1	–	–	46	35	–	–	46	35
Alternative 7G	3.2	–	–	65	37	–	–	65	37
Proposed – Comparison Portion for Alternatives 7H,I	118	–	–	650	161	–	–	650	161
Alternative 7H	127.5	26	6	500	221	–	–	520	225
Alternative 7I	173.4	–	–	683	404	5	3	683	404
Proposed – Comparison Portion 7/9 for Alt. 7J ^{2/}	143.9	–	–	821	245	–	–	821	245
Alternative 7J ^{2/}	202.1	–	–	753	387	5	3	752	387

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.

2/ Alternative 7J connects with Segment 9 approximately 25.8 miles west of the proposed Cedar Hill Substation, which is the western terminus of Segment 7 and the beginning point for Segment 9. The table above compares 7J (202 miles) with the corresponding portion of Segment 7/9 (118.1 miles of Segment 7 and 25.8 miles of Segment 9, for a total of 143.9 miles). All other Segment 7 alternatives are compared to Segment 7 of the Proposed Route (118.1 miles) only.

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

Raptors

The Proposed Route for Segment 7 would pass within 1 mile of 12 currently documented nests: three of burrowing owls and nine of ferruginous hawks (Table 3.10-31).

Alternative 7J would pass by the greatest number of nests, followed by Alternatives 7H and 7I.

Table 3.10-31. Comparison of Raptor Nests within 1 mile of the Proposed Route and Route Alternatives for Segment 7, and How Many are on Federal Land, if any

Segment or Alternative	Total Nests	Number of Nests (number on federal land)					
		Burrowing owl	Common Raven	Ferruginous hawk	Golden eagle	Red-tailed hawk	Swainson's hawk
Proposed – Total Length	12 (6)	3 (3)	–	9 (3)	–	–	–
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	2 (2)	2 (2)	–	–	–	–	–
Proposed – Comparison Portion for Alternative 7D	1 (1)	1 (1)	–	–	–	–	–
Alternative 7D	1 (1)	1 (1)	–	–	–	–	–
Proposed – Comparison Portion for Alternative 7E	7 (1)	–	–	7 (1)	–	–	–
Alternative 7E	7 (1)	–	–	7 (1)	–	–	–
Proposed – Comparison Portion for Alternative 7F	7 (1)	–	–	7 (1)	–	–	–
Alternative 7F	7 (1)	–	–	7 (1)	–	–	–
Proposed – Comparison Portion for Alternative 7G	–	–	–	–	–	–	–
Alternative 7G	–	–	–	–	–	–	–
Proposed – Comparison Portion for Alternatives 7H,I	12 (6)	3 (3)	–	9 (3)	–	–	–
Alternative 7H	54 (31)	1 (1)	–	48 (25)	–	–	5 (5)
Alternative 7I	66 (34)	1 (1)	–	58 (30)	3 (1)	2 (2)	2
Proposed– Comparison Portion 7/9 for Alt. 7J ^{1/}	32 (26)	3 (3)	2 (2)	27 (21)	–	–	–
Alternative 7J ^{1/}	85	1 (1)	2 (2)	75 (37)	3 (1)	2 (2)	2

1/ Alternative 7J connects with Segment 9 approximately 25.8 miles west of the proposed Cedar Hill Substation, which is the western terminus of Segment 7 and the beginning point for Segment 9. The table above compares 7J (202 miles) with the corresponding portion of Segment 7/9 (118.1 miles of Segment 7 and 25.8 miles of Segment 9, for a total of 143.9 miles). All other Segment 7 alternatives are compared to Segment 7 of the Proposed Route (118.1 miles) only.

Fish

A total of 18 stream crossings are proposed for the Proposed Route of Segment 7. Of those on federal land, 7 of the 11 along Alternative 7I would be on NFS land. There would be 5 acres of riparian vegetation cleared during construction of the Proposed Route, less than 1 acre of which would be kept clear during operations. Of the riparian vegetation removed that is on federal land, there is 1 acre along Alternative 7I and less than 1 acre along Alternatives 7I and 7J that lie on NFS land. Table 3.10-32 compares the Proposed Route of Segment 7 with Alternatives 7A through 7J in regard to construction impacts to fish resources.

Table 3.10-32. Comparison of Stream Crossings (and the number on federal land, if any) and Acres of Riparian Clearing During Construction for the Segment 7 Proposed Route and Alternatives 7A through 7J (and the amount on federal land, if any)

Segment or Alternative	Number of Stream Crossings	Acres of Riparian Habitat Cleared ^{1/}
Proposed – Total Length	18 (3)	5 (<1)
Proposed – Comparison Portion for Alternatives 7A,B	–	2
Alternative 7A	4 (2)	3 (<1)
Alternative 7B	3 (2)	1
Proposed – Comparison Portion for Alternative 7C	–	<1
Alternative 7C	1	–
Proposed – Comparison Portion for Alternative 7D	–	2 (<1)
Alternative 7D	–	2
Proposed – Comparison Portion for Alternative 7E	2 (1)	–
Alternative 7E	3	–
Proposed – Comparison Portion for Alternative 7F	8 (2)	<1
Alternative 7F	2	<1
Proposed – Comparison Portion for Alternative 7G	–	–
Alternative 7G	–	<1
Proposed – Comparison Portion for Alternatives 7H,I	9 (2)	5 (<1)
Alternative 7H	12 (5)	5 (1)
Alternative 7I	23 (11)	13 (3)
Proposed – Comparison Portion 7/9 for Alt. 7J ^{2/}	10 (2)	5 (<1)
Alternative 7J ^{2/}	23 (8)	11 (2)

1/ Acreages are rounded to nearest whole acre.

2/ Alternative 7J connects with Segment 9 approximately 25.8 miles west of the proposed Cedar Hill Substation, which is the western terminus of Segment 7 and the beginning point for Segment 9. The table above compares 7J (202 miles) with the corresponding portion of Segment 7/9 (118.1 miles of Segment 7 and 25.8 miles of Segment 9, for a total of 143.9 miles). All other Segment 7 alternatives are compared to Segment 7 of the Proposed Route (118.1 miles) only.

Operations

Habitat Fragmentation

Table 3.10-33 presents the comparison portion of Segment 7 with Alternatives 7A through 7J for habitat fragmentation from proposed roads and the transmission line.

Table 3.10-33. Comparison of Habitat Fragmentation from Road and Transmission Lines for the Segment 7 Proposed Route and Alternatives 7A through 7J

Segment or Alternative	Forest /Woodlands		Shrublands		Grasslands		Riparian /Wetland		Agriculture /Disturbed	
	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}
Proposed – Total Length	-5	180	-19	551	-4	235	< -1	6	-45	290
Proposed – Comparison Portion for Alternative 7A,B	-7	125	-35	290	-2	62	< -1	3	-83	127
Alternative 7A	-6	167	-48	337	-3	114	< -1	11	-90	141
Alternative 7B	-3	133	-60	397	-3	100	< -1	11	-104	158
Proposed – Comparison Portion for Alternative 7C	< -1	10	-6	66	-6	55	-	-	-66	48
Alternative 7C	< -1	10	-9	66	-7	54	-	-	-71	48
Proposed – Comparison portion for Alternative 7D	-2	9	-13	78	-9	73	-	-	-11	16
Alternative 7D	-2	9	-13	78	-9	73	-	-	-10	16
Proposed – Comparison Portion for Alternative 7E	-5	29	-59	104	-4	60	-	-	-18	26
Alternative 7E	-5	29	-50	104	-5	60	-	-	-18	26
Proposed – Comparison Portion for Alternative 7F	-5	29	-40	106	-5	68	-	-	-30	43
Alternative 7F	-5	29	-39	106	-4	68	-	-	-30	43
Proposed – Comparison Portion for Alternative 7G	-1	10	-87	55	-2	26	-	-	-71	29
Alternative 7G	-1	10	-91	55	-2	26	-	-	-72	29
Proposed – Comparison Portion for Alternatives 7H,I	-5	180	-19	551	-4	235	< -1	6	-45	290
Alternative 7H	-3	197	-30	613	-4	224	< -1	22	-36	202
Alternative 7I	-2	196	-39	735	-3	246	< -1	22	-27	190
Proposed – Comparison Portion 7/9 for Alternative 7J ^{3/}	-2	61	-6	320	-2	183	< -1	1	-15	180
Alternative 7J ^{3/}	-2	198	-30	841	-3	315	< -1	24	-23	204

1/ The difference between average patch size following construction.

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

3/ Alternative 7J connects with Segment 9 approximately 25.8 miles west of the proposed Cedar Hill Substation, which is the western terminus of Segment 7 and the beginning point for Segment 9. The table above compares 7J (202 miles) with the corresponding portion of Segment 7/9 (118.1 miles of Segment 7 and 25.8 miles of Segment 9, for a total of 143.9 miles). All other Segment 7 alternatives are compared to Segment 7 of the Proposed Route (118.1 miles) only.

Acreages are rounded to nearest whole acre.

Big Game

Operations impacts to mule deer winter range along the Proposed Route are estimated at 77 acres. Of these acres, 19 are on federal land, a trace amount of which is on the Caribou-Targhee NF. There is no elk or bighorn sheep winter range along the Proposed Route; however, some impacts would occur along alternative routes. There would be 17 acres of operations impacts to elk summer range along Alternatives 7I and 7J (15 acres of which are federal land, administered by BLM), and 6 acres of impact to elk yearlong range (almost all of which is on federal land, administered by BLM). Alternatives 7I and 7J would also impact 5 acres of mule deer yearlong range (4 of which are on federal land, administered by BLM) and 1 acre of pronghorn summer range during operations (less than an acre of which is federal, administered by BLM). Of the acres of summer range impacted along Alternatives 7I and 7J, 15 would be on federal land, a trace amount of which is on the Sawtooth NF. Of the acres of yearlong range impacted, 10 are on federal land, all administered by the BLM. Table 3.10-34 compares Segment 7 against Alternatives 7A through 7J in regard to impacts on big game winter range.

Table 3.10-34. Acres of Big Game Designated Winter Range Affected by Operations of the Segment 7 Proposed Route and Alternatives 7A through 7J

Segment or Alternative	Mule Deer		Elk		Bighorn sheep		Total ^{1/}	
	Total	Federal	Total	Federal	Total	Federal	Total	Federal
Proposed – Total Length	77	19	–	–	–	–	77	19
Proposed – Comparison Portion for Alternative 7A,B	23	7	–	–	–	–	23	7
Alternative 7A	20	10	–	–	–	–	20	10
Alternative 7B	22	11	–	–	–	–	22	11
Proposed – Comparison Portion for Alternative 7C	6	0	–	–	–	–	6	0
Alternative 7C	9	<1	–	–	–	–	9	<1
Proposed – Comparison portion for Alternative 7D	4		–	–	–	–	4	–
Alternative 7D	4		–	–	–	–	4	–
Proposed – Comparison Portion for Alternative 7E	5	<1	–	–	–	–	5	<1
Alternative 7E	8	3	–	–	–	–	8	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
Alternative 7G	4	2	–	–	–	–	4	2
Proposed – Comparison Portion for Alternatives 7H,I	77	19	–	–	–	–	77	19
Alternative 7H	79	33	–	–	4	1	81	33
Alternative 7I	110	69	3	1	0	0	110	69
Proposed – Comparison Portion 7/9 for Alt. 7J ^{2/}	94	30	–	–	–	–	94	30
Alternative 7J ^{2/}	151	62	3	1	–	–	154	63

1/ Totals given have taken any overlap among winter range for different species taken into account so that the total number of acres impacted is reported.

2/ Alternative 7J connects with Segment 9 approximately 25.8 miles west of the proposed Cedar Hill Substation, which is the western terminus of Segment 7 and the beginning point for Segment 9. The table above compares 7J (202 miles) with the corresponding portion of Segment 7/9 (118.1 miles of Segment 7 and 25.8 miles of Segment 9, for a total of 143.9 miles). All other Segment 7 alternatives are compared to Segment 7 of the Proposed Route (118.1 miles) only. Acres are rounded to nearest whole acre; therefore, columns/rows may not sum exactly.

Where Alternatives 7H, 7I, and 7J cross the Sawtooth NF, the effects on road density from the Project have been calculated. Table 3.10-35 shows existing road densities on NFS land and densities of roads that would exist during Project operations, by fifth-field watershed.

Table 3.10-35. Road Densities on NFS Land before and after Project Implementation (miles per square mile)

Route or Segment Fifth-field Watershed	Existing		With Project		
	Total Road Density	Open Road Density	New Project Roads	Total Road Density	Open Road Density
Alternative 7H					
Rock Creek	1.0	1.0	<0.1	1.0	1.0
Meadow Creek	1.0	1.0	0.3	1.3	1.0
Cassia Creek	0.7	0.6	<0.1	0.7	0.6
Sublett Creek-Warm Creek	1.0	1.0	<0.1	1.0	1.0
Lower Goose Creek	0.3	0.2	<0.1	0.3	0.2
Alternative 7I					
Rock Creek	1.0	1.0	<0.1	1.0	1.0
Meadow Creek	1.0	1.0	0.3	1.3	1.0
Sublett Creek-Warm Creek	1.0	1.0	<0.1	1.0	1.0
Headwaters Goose Creek	1.5	1.3	<0.1	1.5	1.3
Rock Creek	1.4	1.2	–	1.4	1.2
Cedar Draw-Snake River	2.9	2.1	0.3	3.2	2.1
Upper Deep Creek	1.0	0.8	0.6	1.7	0.8
Shoshone Creek	1.8	1.5	0.2	2.0	1.5
Alternative 7J					
Headwaters Goose Creek	1.4	1.3	–	1.5	1.3
Meadow Creek	1.0	1.0	0.3	1.3	1.0
Rock Creek 1704020901	1.0	1.0	0.1	1.0	1.0
Shoshone Creek	1.8	1.5	–	1.9	1.5
Sublett Creek-Warm Creek	1.0	1.0	0.1	1.0	1.0

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 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.

The largest change in average patch size between the Proposed Route and an alternative is in agricultural lands along Alternative 7B (a decrease of 104 acres), and the largest change to the number of patches, in shrublands, is along Alternative 7J (an increase of 841 in the number of patches). Overall, selection of the Proposed Route or Alternatives 7D, 7E, or 7F would have the least effect on fragmentation.

Big Game

The only bighorn sheep winter range encountered along Segment 7 would be a small amount along Alternative 7H, and the only elk winter range is a small amount along Alternatives 7I and 7J. The total amount of big game winter range impacted along

Segment 7 is largely driven by mule deer range. Overall, when the Proposed Route and all 10 Route Alternatives are compared, Alternative 7H would have the least impacts on winter range during construction, with a decrease of 124 acres from the comparison portion of the Proposed Route, and Alternative 7C would have the most impacts. During operations, Alternative 7J would impact the most big game winter range.

Raptors

The selection of Alternatives 7A, 7B, 7D, 7E, 7F, or 7G would have no effect on the number of raptor nests affected by the Project. If Alternative 7C was chosen, it would avoid the two ferruginous hawk nests along the comparison portion of the Proposed Route and affect the fewest raptors in this area. The selection of Alternatives 7H or 7I would increase the number of raptor nests within 1 mile of the transmission line; 7H would be near 42 more nests and 7I near 54 more nests than the comparison portion of the Proposed Route. In total, these two Route Alternatives would also affect more raptor species than the comparison portion of the Proposed Route; combined, they would also affect golden eagle, red-tailed hawk, and Swainson's hawk. Alternatives 7H and 7I would result in impacts to the greatest number of nesting raptors, compared to the Proposed Route or Alternatives 7A through 7G. Alternative 7J would pass within 1 mile of 53 more nests than the comparison portion of the Proposed Route. This is a greater increase in the number of nests impacted than any of the other alternatives. If Alternative 7C were selected, the fewest breeding raptors would be impacted.

Fish

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

Segment 8

Segment 8, as proposed, would link the Midpoint and Hemingway Substations. This 131-mile single-circuit 500-kV transmission line would stay north of the Snake River until crossing through the SRBOP parallel to an existing 500-kV transmission line before ending at the Hemingway Substation. Thirteen acres of the expansion of the Midpoint Substation and 0.5 acre for a regeneration site are attributed to Segment 8. There are five Route Alternatives: 8A, which follows the WWE corridor but crosses the Snake River and I-84 twice (while the Proposed Route would stay north of this area); 8B and 8C, which represent the old routes originally proposed by the Proponents but that have now been changed to avoid the cities of Kuna and Mayfield, respectively; 8D, which represents a small revision involving a rebuild of the existing transmission line to move both away from the National Guard Maneuver Area; and 8E, which was proposed by the BLM in order to avoid crossing the Halverson Bar nonmotorized portion of the Guffey Butte-Black Butte Archaeological District (see Appendix A, Figure A-10).

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 100 acres of winter range for pronghorn, 750 acres of winter range for mule deer, and 273 acres of winter range for elk along its 131-mile length. Because there is overlap among winter ranges for these three species, the total amount of this habitat type impacted by the Proposed Route is 1,047 acres. Of these acres, 614 are on federal land, administered by BLM or Bureau of Reclamation. There is no parturition or summer habitat identified along Segment 8. Table 3.10-36 compares Segment 8 against Alternatives 8A through 8E in regard to impacts on big game winter range.

Table 3.10-36. Comparison of Big Game Designated Winter Range Impacted by the Segment 8 Proposed Route and Alternatives 8A through 8E during Construction (acres)

Segment or Alternative	Length (miles)	Mule Deer		Pronghorn		Elk		Bighorn Sheep		Total ^{1/}	
		Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal
Proposed – Total Length	131.0	750	436	100	60	273	156	–	–	1,047	614
Proposed – Comparison Portion for Alternative 8A	51.4	654	408	–	–	–	–	–	–	654	408
Alternative 8A	53.6	296	158	–	–	–	–	–	–	296	158
Proposed – Comparison Portion for Alternative 8B	45.3	–	–	–	–	92	77	–	–	92	77
Alternative 8B	45.8	–	–	–	–	92	77	–	–	92	77
Proposed – Comparison Portion for Alternative 8C	6.5	–	–	–	–	92	77	–	–	92	77
Alternative 8C	6.4	–	–	–	–	93	27	–	–	92	27
Proposed – Comparison Portion for Alternative 8D	6.9	–	–	–	–	–	–	–	–	–	–
Alternative 8D	8.1	–	–	–	–	–	–	–	–	–	–
Proposed – Comparison Portion for Alternative 8E	7.0	–	–	–	–	–	–	–	–	–	–
Alternative 8E	18.5	–	–	–	–	–	–	16	16	16	16

^{1/} Totals given have taken any overlap among winter range for different species taken into account so that the total number of acres impacted is reported.

Acres 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 301 currently documented nests: 43 of burrowing owls, 86 of ferruginous hawks and 172 of prairie falcon (Table 3.10-37).

Table 3.10-37. Comparison of Raptor Nests within 1 mile of Proposed Segment 8 and Alternatives 8A through 8E, and How Many are on Federal Land, if any

Segment or Alternative	Total Nests	Number of Nests (number on federal land)		
		Burrowing owl	Ferruginous hawk	Prairie falcon
Proposed – Total Length	301 (252)	43 (36)	86 (55)	172 (161)
Proposed – Comparison Portion for Alternative 8A	1	1	–	–
Alternative 8A	–	–	–	–
Proposed – Comparison Portion for Alternative 8B	283 (241)	42 (36)	69 (44)	172 (161)
Alternative 8B	52 (19)	33 (12)	19 (7)	–
Proposed – Comparison Portion for Alternative 8C	12 (4)	–	12 (4)	–
Alternative 8C	17 (5)	–	17 (5)	–
Proposed – Comparison Portion for Alternative 8D	50 (38)	14 (11)	36 (27)	–
Alternative 8D	57 (40)	17 (13)	40 (27)	–
Proposed – Comparison Portion for Alternative 8E	184 (172)	19 (18)	3 (3)	162 (151)
Alternative 8E	510 (458)	16 (16)	42 (40)	452 (402)

Fish

A total of three stream crossings are proposed for the Proposed Route of Segment 8. During construction, 1 acre 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 3.10-38 shows how the Proposed Route compares to its five Route Alternatives in regard to construction impacts to fish resources.

Table 3.10-38. Comparison of Stream Crossings (and the number on federal land, if any) and Acres of Permanent Riparian Clearing for the Segment 8 Proposed Route and Alternatives 8A through 8E (and the amount on federal land, if any)

Segment or Alternative	Number of Stream Crossings	Acres of Riparian Habitat Cleared ^{1/}
Proposed – Total Length	3 (1)	1 (<1)
Proposed – Comparison Portion for Alternative 8A	2	<1 (<1)
Alternative 8A	1 (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	–	<1
Proposed – Comparison Portion for Alternative 8D	–	–
Alternative 8D	–	–
Proposed – Comparison Portion for Alternative 8E	–	–
Alternative 8E	–	<1

1/ Acreages are rounded to nearest whole acre.

Operations

Habitat Fragmentation

Table 3.10-39 presents the comparison portion of the Segment 8 Proposed Route with Alternatives 8A through 8E with regard to habitat fragmentation from proposed roads and the transmission line.

Table 3.10-39. Comparison of Habitat Fragmentation from Roads and Transmission Lines by Habitat Type for the Segment 8 Proposed Route and Alternatives 8A through 8E

Segment or Alternative	Forest/ Woodlands		Shrublands		Grasslands		Riparian/ Wetland		Agriculture/ Disturbed	
	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}
Proposed – Total Length	-	-	-4	463	-2	528	< -1	10	-9	73
Proposed – Comparison Portion for Alternative 8A	-	-	-3	144	-3	168	-	-	-13	56
Alternative 8A	-	-	-2	178	-3	234	-	-	-9	75
Proposed – Comparison Portion for Alternative 8B	-	-	-4	249	-2	290	< -1	8	-6	13
Alternative 8B	-	-	-3	154	-2	181	< -1	3	-8	32
Proposed – Comparison Portion for Alternative 8C	-	-	-3	60	-2	72	-	-	-8	2
Alternative 8C	-	-	-3	60	-2	72	-	-	-8	2
Proposed – Comparison Portion for Alternative 8D	-	-	-2	49	-3	77	-	-	-2	2
Alternative 8D	-	-	-2	51	-3	81	-	-	-1	2
Proposed – Comparison Portion for Alternative 8E	-	-	-3	67	-3	87	< -1	3	-7	5
Alternative 8E	-	-	-4	128	-3	153	< -1	3	-8	8

1/ The difference between average patch size following construction.

2/ The number of additional fragments created as a result of the Project.
Acreages are rounded to nearest whole acre.

Big Game

Operations impacts along the Proposed Route for Segment 8 to big game winter range are estimated at approximately 92 acres for mule deer, 13 acres for pronghorn, and 32 acres for elk (Table 3.10-40). 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 129 acres. Seventy of these acres are on federal land, all administered by the BLM or Bureau of Reclamation. Table 3.10-40 compares Segment 8 against Alternatives 8A through 8E in regard to impacts on big game winter range.

Table 3.10-40. Acres of Big Game Designated Winter Range Affected by Operations, Segment 8 and Alternatives 8A through 8E

Segment or Alternative	Mule Deer		Pronghorn		Elk		Bighorn Sheep		Total ^{1/}	
	Total	Federal	Total	Federal	Total	Federal	Total	Federal	Total	Federal
Proposed – Total Length	92	51	13	7	32	16	–	–	129	70
Proposed – Comparison Portion for Alternative 8A	83	49	–	–	–	–	–	–	83	49
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 taken into account so that the total number of acres impacted is reported.

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 9 acres on average), and the biggest increase in patch counts would be in grasslands (528 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 eight to three) and improve the change in average patch size from a loss of 1 acre to no change. 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 all types impacted. Alternative 8A would increase fragmentation in shrublands and grasslands compared to the Proposed Route, while 8B would decrease fragmentation in all affected habitat types.

Big Game

Alternative 8A is the only alternative that would have any effect on the amount of impacts to mule deer winter range; it would bypass 358 acres of this habitat type during construction and 35 during operations compared to the Proposed Route. For pronghorn and elk winter range, which alternative is chosen would have very little effect on how much is impacted (a change in no more than 4 acres). Bighorn sheep winter range would only be impacted if Alternative 8E is chosen. Overall, the selection of Alternative 8E would result in the least number of acres of big game winter range impacted during construction and operations, only impacting one species, bighorn sheep.

Raptors

The selection of Alternative 8A would avoid one burrowing owl nest. The selection of Alternative 8B would decrease the number of nests impacted by 231, avoiding burrowing owl, ferruginous hawk, 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 three more burrowing owl nests and four more ferruginous hawk nests than the comparison portion. Alternative 8E lies within 1 mile of three less burrowing owl nests than the comparison portion, but 39 more ferruginous hawk nests and 290 more prairie falcon nests. The selection of Alternative 8B would affect the fewest breeding raptors.

Fish

In terms of number of stream crossings, Alternative 8A would eliminate one crossing 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, 8B, and 8E would increase the number of acres, and Alternative 8C would decrease the number of acres slightly. Neither Alternative 8D nor its comparison portion of the Proposed Route would have impacts to fish or their habitat. In regard to fish resources, selection of either Alternative 8C would likely have the least effects, though for this segment the least impactful choice is not clear and would depend on the characteristics of the specific streams crossed and vegetation cleared.

Segment 9

Segment 9, as proposed, would link the Cedar Hill and Hemingway Substations with a 161.7 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 into the Hemingway Substation. Fifteen acres of the construction of the Cedar Hill Substation and 1 acre for two regeneration sites are attributed to Segment 9. There are eight Route Alternatives proposed, including 9A, which was the Proponents' Proposed Route until moving to avoid the Hollister area; 9B, which is being considered by the BLM because it follows the WWE corridor and parallels existing utility corridors; 9C, which was the Proponents' Proposed Route until moving to avoid the Castleford area; and 9D and 9E, proposed by the Owyhee County taskforce, that cross more public lands north and south of the Proposed Route, respectively, than the Proposed Route. Most of Alternative 9D

would be within the SRBOP. Alternatives 9F, 9G, and 9H were proposed to avoid crossing the nonmotorized area south of C.J. Strike Reservoir. Alternatives 9G and 9H provide an alternate route location south of Alternative 8E (see Appendix A, Figure A-11).

Construction

Big Game

The Proposed Route of Segment 9 would impact 171 acres of winter range for mule deer, and 331 acres of winter range for pronghorn. There is no overlap among winter range of the three species, so the total amount impacted is 503 acres, 369 of which are on federal land, administered by the BLM. 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 3.10-41). No parturition or summer habitat has been identified along Segment 9 or any of its eight Route Alternatives. Table 3.10-41 compares Segment 9 against Alternatives 9A through 9H 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, 9F, 9G, and 9H would not meet this recommendation.

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

Table 3.10-41. Comparison of Big Game Designated Winter Range Impacted by Proposed Segment 9 and Alternatives 9A through 9H (acres)

Segment or Alternative	Total Miles	Bighorn sheep		Mule deer		Pronghorn		Total ^{1/}	
		Total	Federal	Total	Federal	Total	Federal	Total	Federal
Proposed – Total Length	161.7	-	-	171	84	331	285	503	369
Proposed – Comparison Portion for Alternative 9A	7.8	-	-	40	22	-	-	40	22
Alternative 9A	7.7	-	-	47	26	-	-	47	26
Proposed – Comparison Portion for Alternative 9B	49.5	-	-	-	-	-	-	-	-
Alternative 9B	53.2	-	-	-	-	-	-	-	-
Proposed – Comparison Portion for Alternative 9C	14.7	-	-	-	-	-	-	-	-
Alternative 9C	15.3	-	-	-	-	-	-	-	-
Proposed – Comparison Portion for Alternatives 9D,E,F,G,H	57.2	-	-	-	-	233	201	233	201
Alternative 9D	58.4	16	16	-	-	9	9	25	25
Alternative 9E	68.7	195	178	-	-	392	369	413	388
Alternative 9F	62.9	16	16	-	-	9	9	25	25
Alternative 9G	56.4	26	26	-	-	13	11	39	37
Alternative 9H	61.0	26	26	-	-	13	11	39	37

^{1/} Totals given have taken any overlap among winter range for different species taken into account so that the total number of acres impacted is reported.

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

Raptors

Segment 9 would pass within 1 mile of 78 currently documented raptor nests: 9 of burrowing owl, 3 of common raven, 43 of ferruginous hawk, 17 of prairie falcon, and 6 of Swainson's hawk (Table 3.10-42).

Table 3.10-42. Comparison of Raptor Nests within 1 mile of the Segment 9 Proposed Route and Alternatives 9A through 9H, and the Number that are on Federal Land

Segment or Alternative	Total Nests	Number of Nests (number on federal land)					
		Burrowing owl	Common raven	Ferruginous hawk	Golden eagle	Prairie falcon	Swainson's hawk
Proposed – Total Length	78 (73)	9 (4)	3 (3)	43 (43)	–	17 (17)	6 (6)
Proposed – Comparison Portion for Alternative 9A	2 (2)	–	–	2 (2)	–	–	–
Alternative 9A	2	–	–	–	2	–	–
Proposed – Comparison Portion for Alternative 9B	32 (30)	3 (1)	–	10 (10)	–	13 (13)	6 (6)
Alternative 9B	12 (12)	1 (1)	–	4 (4)	–	7 (7)	–
Proposed – Comparison Portion for Alternative 9C	17 (16)	1	–	10 (10)	–	–	6 (6)
Alternative 9C	5 (4)	1	–	4 (4)	–	–	–
Proposed – Comparison Portion for Alternatives 9D,E, F, G, H	12 (9)	4 (1)	1 (1)	7 (7)	–	–	–
Alternative 9D	582 (520)	99 (98)	–	52 (45)	–	431 (377)	–
Alternative 9E	13 (13)	3 (3)	–	10 (10)	–	–	–
Alternative 9F	539 (477)	96 (95)	–	57 (50)	–	386 (332)	–
Alternative 9G	606 (560)	93 (92)	–	37 (32)	–	476 (436)	–
Alternative 9H	563 (517)	90 (89)	–	42 (37)	–	431 (391)	–

Fish

A total of three stream crossings are proposed for the Proposed Route of Segment 9. All crossings that would be on federal land are on BLM-administered land. There would be 2 acres of riparian vegetation cleared along the Proposed Route during construction, less than 1 acre of which would be kept clear during operations (Table 3.10-43). All riparian vegetation that would be cleared that is located on federal land is on BLM-administered land.

Table 3.10-43. Comparison of Perennial Stream Crossings (and the number on federal land, if any) and Acres of Permanent Riparian Clearing for Proposed Segment 9 and Alternatives 9A through 9H (and the amount on federal land, if any)

Segment or Alternative	Number of Stream Crossings	Acres of Riparian Habitat Cleared ^{1/}
Proposed – Total Length	3 (2)	2 (<1)
Proposed – Comparison Portion for Alternative 9A	1	<1
Alternative 9A	3 (2)	<1
Proposed – Comparison Portion for Alternative 9B	1 (1)	<1 (<1)
Alternative 9B	1 (1)	<1 (<1)
Proposed – Comparison Portion for Alternative 9C	–	<1 (<1)
Alternative 9C	–	–
Proposed – Comparison Portion for Alternatives 9D,E,F,G,H	1	2 (<1)
Alternative 9D	–	2 (<1)
Alternative 9E	4 (4)	1 (1)
Alternative 9F	–	5 (<1)
Alternative 9G	–	2 (<1)
Alternative 9H	–	5 (<1)

1/ Acreages are rounded to nearest whole acre.

Operations

Habitat Fragmentation

Table 3.10-44 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 and for Alternatives 9A through 9H.

Lines by Habitat Type for the Segment 9 Proposed Route and Alternatives 9A through 9H

Segment or Alternative	Difference in Fragmentation Levels Between Pre and Post Construction									
	Forest/Woodlands		Shrublands		Grasslands		Riparian/Wetland		Agriculture/Disturbed	
	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}
Proposed – Total Length	< -1	4	-6	714	-4	665	-1	20	-12	147
Proposed – Comparison Portion for Alternative 9A	–	–	-13	72	-4	42	–	–	-22	17
Alternative 9A	–	–	-13	76	-4	45	–	–	-22	17

Table 3.10-44. Comparison of Habitat Fragmentation from Roads and Transmission Lines by Habitat Type for the Segment 9 Proposed Route and Alternatives 9A through 9H (continued)

Segment or Alternative	Difference in Fragmentation Levels Between Pre and Post Construction									
	Forest/Woodlands		Shrublands		Grasslands		Riparian/Wetland		Agriculture/Disturbed	
	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}
Proposed – Comparison Portion for Alternative 9B	-	-	-8	232	-4	175	< -1	1	-10	49
Alternative 9B	-	-	-5	273	-4	245	< -1	1	-12	83
Proposed – Comparison Portion for Alternative 9C	-	-	-24	84	< -1	22	< -1	1	-23	27
Alternative 9C	-	-	-23	85	< -1	22	< -1	1	-24	32
Proposed – Comparison Portion for Alternatives 9D,E,F,G,H	-	-	-3	239	-4	312	-2	14	-7	51
Alternative 9D	-	-	-3	309	-2	332	-1	15	-4	39
Alternative 9E	-	-	-11	303	-3	313	-3	12	-3	7
Alternative 9F	-	-	-3	294	-3	357	-1	13	-6	56
Alternative 9G	-	-	-3	283	-3	345	-1	13	-5	48
Alternative 9H	-	-	-3	284	-3	346	-1	13	-5	51

1/ The difference between average patch size following construction.
 2/ The number of additional fragments created as a result of the Project.
 Acreages are rounded to nearest whole 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 44 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 3.10-45). A total of 47 acres of the operations impact by the Proposed Route would be on federal land, all administered by the BLM. Table 3.10-45 compares Segment 9 against Alternatives 9A through 9H in regard to impacts on big game winter range.

Table 3.10-45. Acres of Big Game Designated Winter Range Affected by Operations, Segment 9 Proposed Route and Alternatives 9A through 9H

Segment or Alternative	Bighorn sheep		Mule deer		Pronghorn		Total ^{1/}	
	Total	Federal	Total	Federal	Total	Federal	Total	Federal
Proposed – Total Length	-	-	17	10	44	37	61	47
Proposed – Comparison Portion for Alternative 9A	-	-	5	3	-	-	5	3
Alternative 9A	-	-	5	3	-	-	5	3

Table 3.10-45. Acres of Big Game Designated Winter Range Affected by Operations, Segment 9 Proposed Route and Alternatives 9A through 9H (continued)

Segment or Alternative	Bighorn sheep		Mule deer		Pronghorn		Total ^{1/}	
	Total	Federal	Total	Federal	Total	Federal	Total	Federal
Proposed – Comparison Portion for Alternative 9B	–	–	–	–	–	–	–	–
Alternative 9B	–	–	–	–	–	–	–	–
Proposed – Comparison Portion for Alternative 9C	–	–	–	–	–	–	–	–
Alternative 9C	–	–	–	–	–	–	–	–
Proposed – Comparison Portion for Alternatives 9D,E,F,G,H	–	–	–	–	28	24	28	24
Alternative 9D	1	1	–	–	<1	<1	2	2
Alternative 9E	32	27	–	–	57	50	64	55
Alternative 9F	1	1	–	–	<1	<1	2	2
Alternative 9G	2	2	–	–	2	2	4	4
Alternative 9H	2	2	–	–	2	2	4	4

1/ Totals given have taken any overlap among winter range for different species taken into account so that the total number of acres impacted is reported.

Acres are rounded to nearest whole acre.

Conclusion

Habitat Fragmentation

The Proposed Route would increase fragmentation in all five habitat types. The greatest decrease in average patch size along the Proposed Route would occur in agriculture/disturbed, with a decrease of 12 acres, and the greatest increase in patch count would occur in shrublands, with 714 patches created. Fragmentation of forest/woodlands would be the same regardless of which alternative is selected. Fragmentation of shrublands would be similar to the Proposed Route if Alternative 9A, 9C, or 9D is selected; Alternatives 9B and 9E would yield mixed results for numbers of miles and acres, and Alternatives 9F, 9G, and 9H would decrease fragmentation. Fragmentation of grasslands would increase under Alternatives 9A and 9B compared to the Proposed Route. Fragmentation of riparian/wetlands would be similar under Alternatives 9A, 9B, 9C and 9D, but would increase under all other alternatives.

Big Game

Bighorn sheep winter range would be encountered along Alternatives 9D, 9E, 9F, 9G, and 9H; if one of these Route Alternatives is not selected, no bighorn sheep habitat would be affected. The amount of mule deer winter range that would be affected during construction would increase by 4 acres if Alternative 9A is selected, but no alternative would affect the amount impacted during operations. Of the 44 acres of pronghorn winter range that would be affected by Segment 9 during operations, 28 would be impacted by the comparison portions for Alternatives 9D through 9H. Selection of Alternatives 9D, 9F, 9G, or 9H would decrease the amount of pronghorn winter range affected to 2 acres or less, while selection of Alternative 9E would result in an increase of 26 acres impacted. 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.

Raptors

The selection of Alternative 9B or 9C would decrease the number of breeding raptors potentially affected by the Project, decreasing the number of nests within 1 mile of the transmission line by 20 and 12, respectively, so that either of these choices would result in the least impacts to breeding raptors along Segment 9. Alternative 9E would increase potential impacts to raptor nests by one. Alternatives 9D, 9F, 9G, or 9H would substantially increase the number of nests impacted: from 12 on the comparison portion of the Proposed Route to 582, 539, 606, or 563 along the Route Alternatives, respectively. The selection of Alternative 9A would affect the same number of nests as the Proposed Route, but it would impact two golden eagle nests instead of two ferruginous hawk nests. The selection of Alternative 9B would impact the fewest nests, while Alternative 9G would impact the highest number.

Fish

Alternatives 9A and 9E would increase the number of streams crossed compared to the Proposed Route. Selection of Alternatives 9C and 9E would decrease the amount of riparian habitat removed, while Alternatives 9A, 9F, 9G, and 9H would cause a increase.

Segment 10

Segment 10, as proposed, would link the Cedar Hill and Midpoint Substations with a 33.6-mile single-circuit 500-kV line, following a WWE corridor for most of its distance. Twenty-eight acres of the expansion of the Midpoint Substation and of the construction of the Cedar Hill Substation are attributed to Segment 10. There are no Route Alternatives proposed along this segment (see Appendix A, Figure A-12). This short segment traverses mostly developed land near Twin Falls, Idaho; 91 percent of the 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 146 acres of designated winter range for mule deer along its 33.6-mile length. Of these 146 acres, 123 are on federal land, administered by the BLM. There is no parturition or summer habitat identified along Segment 10 for any big game species.

Raptors

Construction of Segment 10 would take place within 1 mile of two burrowing owl nests. One of these nests is on BLM-administered land, and the other is on private land.

Fish

There would be no stream crossings along Segment 10, and less than 1 acre of riparian vegetation would be cleared during construction but revegetated during operations. No riparian vegetation on federal 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 below in Table 3.10-46. No Route Alternatives have been assessed for Segment 10.

Table 3.10-46. Comparison of Habitat Fragmentation from Roads and Transmission Lines by Habitat Type for the Segment 10 Proposed Route

Segment or Alternative	Forest/ Woodlands		Shrublands		Grasslands		Riparian/ Wetland		Agriculture/ Disturbed	
	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}	Change in Average patch size (acre) ^{1/}	Change in Patch Count ^{2/}
Proposed – Total Length	< -1	4	-2	63	-8	89	< -1	1	-40	64

Acreages are rounded to nearest whole acre.

Segment 10 would cause habitat fragmentation in all five habitat types analyzed, creating a total of 221 additional patches. The biggest decrease in average patch size, 40 acres, would be in agriculture/disturbed, and the greatest number of new patches created would be in grasslands, with 89.

Big Game

During operations, Segment 10 would impact 31 acres of mule deer winter range, 16 acres of which is federally administered, all by the BLM.

3.10.2.4 Design Variation

A Design Variation is being considered that would consist of constructing two single-circuit lines in Segments 2 through 4 instead of a single double-circuit line (which is the design assessed above). The disturbance footprint of the two single-circuit towers is greater than that of the double-circuit tower, in part because the requested ROW would be wider, but also because helicopter-assisted construction could be implemented in these areas due to the lighter weight of the towers, which would require additional fly yards. The additional ROW space and the fly yards would cause additional temporary disturbance during construction. Across Segments 2, 3, and 4, the additional disturbance of the single-circuit tower variation ranges from 25 to 30 percent greater than comparable portions of the double-circuit tower disturbance under the proposed design, and so would have more impacts to, for example, big game range (Appendix D, Table D.10-10). The two single circuits require more ground disturbance, but would be designed and constructed to the same standards as the Proposed Action.

The wider ROW is unlikely to have a substantially different impact on habitat fragmentation than the proposed design. The number of raptor nests within 1 mile is determined using the centerline of the route, so those numbers would also not change for the Design Variation. The amount of riparian vegetation that would be cleared during construction would increase under the Design Variation for most segments and

alternatives (see Table D.9-3 in Appendix D). An advantage of the Design Variation is that H-frame structures could be substituted if needed for site-specific mitigation. This would increase the options available to prevent or limit raptor use of the transmission line and pole structures. The use of helicopters for the Design Variation would cause increased disturbance to wildlife due to noise. High winds created by propellers could also disturb wildlife, potentially blowing birds off nests. Mitigation measures such as timing restrictions (daily and seasonal) and spatial restrictions (based on both location and elevation) could minimize these impacts.

3.10.2.5 Structure Variation

The proposed guyed Structure Variation would add four guy wires about 140 feet long from a point about 100 feet up in each tower to four guy anchors spaced in a square around the tower (Appendix B, Figure B-6). This would not change the amount of disturbance during construction or operations appreciably. Extra care would be needed where towers are near known concentrations of birds to avoid placing guy wires in these areas. Self-supporting lattice towers would be used if avian collision impacts could be avoided by doing so. Therefore, there would be no appreciable difference in impacts on birds from the use of this Structure Variation when compared to the use of self-supporting lattice towers. These guy wires would be thick (about 1 inch in diameter). In addition, the Agencies have recommended that the following measure be applied:

- WILD-7 On federal lands, guy wires should be marked with bird deterrent devices to avoid avian collisions with structures on public lands (I.M. 2010-022).

In coordination with the Proponents' Avian Protection Plan, the BLM would require that flight diverters also be installed where the line crosses certain rivers located on federal lands (see Table 3.10-3), and recommends that they be installed on state and private lands.

The Kemmerer RMP prohibits new, permanent high-profile structures relying on guy wires for support in occupied sagebrush obligate habitats. Exceptions to this can be made if NEPA analysis shows little or no impact to sagebrush obligate species. If the Structure Variation of this Project is adopted, mitigation measure TESWL-22 would be implemented, which states that, "No structures that require guy-wires will be used in obligate sagebrush occupied habitat within the area managed under the Kemmerer Resource Management Plan."

3.10.2.6 Schedule Variation

The Schedule Variation uses the two single-circuit design variation described above but extends construction over a longer timeframe. Initially only one of the eventual two single-circuit lines would be constructed with the second to be constructed at a later date. The Schedule Variation proposes that the first single-circuit transmission line in Segments 2, 3, and 4 would be built as soon as a ROW grant is issued, but that the second line would not begin construction until late 2018. This would mean nearly 2 years between the end of construction for the first line and beginning of construction for the second line. Any staging areas and fly yards that had been used for the first stage would have been revegetated after construction was complete and would be cleared again if necessary. There would be two sets of construction disturbances adding

movement, noise, and dust to the area of construction in two instances in any given area.

The Schedule Variation would therefore have essentially double the adverse indirect impacts on adjacent habitat and populations as the simultaneous construction or double-circuit alternative, even though acreage of direct habitat disturbance overall would not be any greater.

3.10.3 Mitigation Measures

To minimize or avoid impacts on general wildlife resources, the Proponents have committed to EPMs that would be implemented Project-wide as outlined in this section and in Appendix C.

The following mitigation measures identified by the Agencies are required on federally managed lands. The Agencies recommend that the Proponents incorporate the measures into their EPMs and apply them Project-wide.

- WILD-1 Requests for exceptions from closure periods and areas must be submitted by the Proponents to the appropriate land management agency office in which the exception is requested. Established exception processes on federally managed lands must be followed. The appropriate agency, or a contractor chosen by the Proponents and approved by the agency, shall 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 must 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.
- 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).
- WILD-4 On federal lands, accurate monitoring, including identifying nest occupancy, shall be conducted in order to ensure that raptor nests are located in advance of any construction activities. This would be needed to ensure that all construction activities would cease in areas near active nests. Biological monitors on site would perform these surveys ahead of construction. If an occupied nest is found, the appropriate restrictions and closures would be adhered to. All encounters with nesting raptors in the Analysis Area must be reported to the biological monitor and to appropriate agencies.

- WILD-5 Surveys will be conducted within 0.5 mile of the route prior to construction for caves, abandoned mines, and adits. If suitable bat roosts are identified, the Proponents will consult with the applicable land management agency to determine appropriate protective measures.
- WILD-6 As part of their annual aerial flight line maintenance activities, the Proponents will document nesting activity (by species) on any towers constructed as a result of this Project. This would occur after the first year of construction until year 10 of operations. Results would be provided to the applicable land management agency.
- WILD-12 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.

The Proponents have accepted the following Agency-proposed mitigation measure:

- WILD-9 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).

To protect big game species from disturbance during sensitive times of year, the Proponents have proposed to recognize the limited operating periods enforced by the BLM and have proposed to apply them Project-wide.

To protect fish, the following measures would be required on federally managed lands:

- FISH-1 On BLM-managed land, all culverts, whether temporary or permanent, must be designed to meet BLM Manual 9113 standards. Culverts should be located, designed, constructed, and maintained according to standards that preserve or improve streambed gradients and velocities to allow fish passage and that minimize erosion and sediment damage. On federal lands, unless the applicable management plan has specific requirements for stream crossings, use the following for culverts in channels with less than 3 percent slope:
- The minimum culvert width shall be equal to or greater than 1.5 times the active channel width.
 - The culvert shall be placed level (zero percent slope).
 - The bottom of the culvert shall be buried into the streambed at not less than 20 percent of the culvert height at the outlet, and not more than 40 percent of the culvert height at the inlet. Embedment does not apply to bottomless culverts.

At sites where the channel slope is greater than 3 percent, additional consideration should be given to alternate design options such as bottomless arch culverts or fords (low-water crossings). This is because of

the difficulty of providing for the passage of aquatic species through culverts installed at these sites. Also, the culvert would be installed so that its slope would match the average grade of the stream immediately up- and down-stream of the culvert site. Follow RMP guidelines where specific requirements are included. On NFS lands, Forest Plan standards and guidelines shall apply.

- FISH-2 All in-stream construction actions will be conducted when critical fish life stages can be avoided as designated by the appropriate state and federal agencies. All culverts placed in fish habitat will be suitable, as determined by the federal or state agency, to pass all life stages present or potentially present within the stream reach. Riparian vegetation removal should be kept to the minimum along fish bearing streams. Blasting in or adjacent to fish-bearing streams will require the state fish agency approval prior to blasting. 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 be used to restore the site of the crossing to pre-Project conditions when temporary roads are decommissioned.

To protect fish habitat in all wetlands and waters of the United States, the following mitigation measure would apply:

- FISH-4 If an aquatic invasive species is discovered during surveys for wetlands and waters of the U.S. conducted for USACE and state permitting prior to construction, the waterbody will be flagged and noted on the construction drawings. After work is complete in that 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 water bodies in the Analysis Area.

To avoid potential impacts on avian species due to collision with conductors, the following measure would apply Project-wide in response to the requirements of the MBTA:

- WILD-8 Flight diverters will be installed and maintained where the transmission line crosses rivers at the locations identified in Table 3.10-3. The flight diverters will be placed on at least one of the higher conductors or ground wires at each river crossing in order to reduce avian collisions. Additional locations may be identified by the Agencies.

To reduce impacts to migratory birds, the Agencies have also recommended that the following measures be applied:

- WILD-3 The Project shall be designed and constructed in compliance with Avian Power Line Interaction Committee standards (APLIC 2006) 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 should also be in compliance with Avian Power Line Interaction Committee standards.

- WILD-7 On federal lands, guy wires should be marked with bird deterrent devices to avoid avian collisions with structures on public lands (I.M. 2010-022).
- WILD-10 To the extent feasible, all vegetation clearing would be conducted prior to the onset of the avian breeding season (generally April 15 through July 31, depending on local conditions and federal land management plan requirements) in order to limit the potential impact of clearing on nesting birds. In addition, pre-construction surveys within the disturbed portion of the ROW and extending a minimum of 30 feet on either side of the ROW shall be conducted. If an active nest is found during pre-construction surveys, the nest will be identified to species, flagged, and avoided until any young have fledged. Avoidance distances are species-specific and must be approved by a USFWS-approved biologist.
- WILD-11 Snags shall be maintained to the extent practical along the outer portions of the Project's ROW in order to reduce the impacts to habitat for cavity nesters.