3.7 Wildlife

3.7.1 Regulatory Background

Regulations that directly influence wildlife management decisions within the wildlife analysis area are primarily implemented by the BLM, USFS, USFWS, and state wildlife agencies. These consist of the Wyoming Game and Fish Department (WGFD), Colorado Parks and Wildlife (CPW) (formerly Colorado Division of Wildlife [CDOW]), Utah Division of Wildlife Resources (UDWR), and Nevada Department of Wildlife (NDOW). The wildlife regulations relevant to the proposed project are presented in **Table 3.7-1**.

Table 3.7-1 Relevant Regulations for Wildlife Species

Wildlife Species	Regulation
Big Game	• Wyoming Statutes 23-3-102; • Colorado Revised Statutes 33-1-101; • Utah Code 23-14-1, 23-16, and Rules R657-5; and • Nevada Administrative Code 503-020.
Small Game	• Wyoming Statutes 23-3-103; • Colorado Revised Statutes 33-1-101; • Utah Code 23-14-1, 23-48, and Rules R657-6, R657-9, R657-10, R657-11, R657-33, and R657-54; and • Nevada Administrative Code 503-020, 503-025, 503-045.
Nongame (including raptors, migratory birds, and reptiles)	• Migratory Bird Treaty Act (16 USC 703 et seq.); • Bald and Golden Eagle Protection Act (16 USC 668 et seq.); • Executive Order (EO) 13186 (66 FR 3853); • BLM MOU WO-230-2010-04 • BLM IM WY-2013-005 • FS Agreement # 08-MU-1113-2400-264 • USFS Land and Resource Management Plans (LRMPs) • Wyoming Statutes 23-1-101, 23-1-103, 23-1-302 and 23-3-108); • Colorado Revised Statutes 33-1-101, 33-2-104; • Utah Code 23-14-1, and Rules R657-3, R65713, R657-19, and R657-53; and • Nevada Administrative Code 503-030, 503-050, 503-075, 503-080.

3.7.2 Data Sources

Information regarding wildlife species and their habitats within the wildlife analysis area was obtained from a review of existing published sources, BLM resource management plans, USFS land and resource management plans (forest management plans), BLM, USFS, WGFD, CPW, UDWR, NDOW, and USFWS file information, as well as WYNDD, CNHP, UNHP, and NNHP database information. GIS shapefiles of big game habitat (e.g., crucial winter range, parturition habitat, migration corridors, etc.) were obtained from the WGFD, CPW, UDWR, and NDOW and reviewed for this project. This information is updated regularly and presents the most accurate habitat data for the wildlife analysis area. In addition, information received through correspondence with agency wildlife biologists has been incorporated, as appropriate. Species-specific surveys for the agency-preferred alternative will be completed after that alternative has been finalized and results of those surveys will be incorporated into the final EIS.

3.7.3 Analysis Areas

The analysis areas for wildlife species were chosen because they represent the combination of geographic areas containing contiguous habitat that would be impacted by the proposed project, as well as the management regimes to which this habitat is subject. Accordingly, these analysis areas provide a clear disclosure of the context of project impacts in light of the management considerations for these areas. The analysis areas are based in part on HUC10 watershed boundaries. HUC 10 watershed refers to the 10-digit hydrologic unit codes specifying the 5th-level watershed boundaries that were originally delineated by the USGS and subsequently refined by the NRCS. These watershed areas average from approximately 40,000 – 250,000 acres in size and provide a clear bio-geographical delineation of vegetation communities and wildlife habitats. Section 3.4, Water Resources presents tables and figures of HUC 10 watersheds in the wildlife analysis area.

Three analysis areas for wildlife species are defined as follows:

- The wildlife analysis area for small game species, nongame species, raptors, migratory birds, Audubon Important Bird Areas (IBAs), and USFWS Bird Habitat Conservation Areas (BHCAs) includes suitable habitat within the HUC 10 watersheds crossed by Project alternatives.

- The big game analysis area includes the most important and limiting seasonal habitat (e.g., crucial winter range, parturition range) within all state big game management units located within HUC 10 watersheds crossed by the Project. This analysis area provides the context for project and cumulative impacts on habitat specifically managed by state agencies for big game populations.

- The MIS Analysis Area for USFS MIS includes suitable habitat within the entire national forest(s) for which they are identified. The exceptions are mule deer and Rocky Mountain elk, which are MIS but are analyzed under the big game analysis area described above. This MIS Analysis Area was chosen because it allows disclosure of the context of impacts within the unique requirements of the USFS for monitoring and managing MIS within the jurisdiction of NFS lands. Seven MIS are also accorded special status as BLM, state-listed, or federal candidate species and are analyzed in Chapter 3.8, Special Status Wildlife Species.

Table 3.7-2 presents the acreages of the major vegetation communities providing wildlife habitat within the wildlife analysis area.

Table 3.7-2 Vegetation Communities Within the Wildlife Analysis Area

Vegetation Community	Acres Within the Wildlife Analysis Area[1]	Percent of the Wildlife Analysis Area
1. Agricultural Land	784,433	3.1
2. Aspen Forest and Woodland	641,483	2.6
3. Barren/Sparsely Vegetated	321,697	1.3
4. Cliff and Canyon	816,392	3.3
5. Conifer Forest	539,604	2.2
6. Deciduous Forest	13,933	0.1
7. Desert Shrubland	3,074,124	12.3
8. Developed/Disturbed Land[2]	988,126	4.0
9. Dunes	133,157	0.5
10. Grassland	1,537,916	6.2

Table 3.7-2 Vegetation Communities Within the Wildlife Analysis Area

Vegetation Community	Acres Within the Wildlife Analysis Area[1]	Percent of the Wildlife Analysis Area
11. Greasewood Flat	875,991	3.5
12. Herbaceous Wetland	188,239	0.8
13. Montane Grassland	70,313	0.3
14. Montane Shrubland	875,292	3.5
15. Open Water	154,328	0.6
16. Pinyon-juniper	4,081,539	16.4
17. Riparian	68,489	0.3
18. Sagebrush Shrubland	6,539,728	26.2
19. Saltbush shrubland	2,991,796	12.0
20. Tundra	13,956	0.1
21. Woody Riparian and Wetlands	214,144	0.9
Total	**24,924,680**	**100**

[1] The wildlife analysis area includes suitable habitat within the HUC 10 watersheds crossed by the Project.

[2] The developed/disturbed vegetation community is not considered to be typical wildlife habitat and is not included in analyses.

Sources: USGS 2010, 2005, 2004 (SWReGAP and NWReGAP).

Table 3.7-3 presents the acreages of the major vegetation communities providing wildlife habitat within the MIS Analysis Area.

3.7.4 Baseline Description

As discussed in Section 3.5, Vegetation, 20 vegetation communities and developed/disturbed land are located within the wildlife analysis area. Developed/disturbed land is not considered to be typical wildlife habitat and is not included in analyses. Vegetation community/habitat types are presented in **Table 3.7-2**. Sagebrush shrubland, saltbush shrubland, desert shrub, and pinyon-juniper are the most common vegetation communities and account for 67 percent of the wildlife analysis area. A variety of wildlife species are associated with habitats found within the wildlife analysis area, with greater species diversity occurring in areas exhibiting greater vegetation structure, soil moisture, and open water, such as wetlands and riparian areas. Species that inhabit wetland and riparian habitats are limited to the perennial and intermittent drainages, reservoirs, lakes, ponds, and marshes that occur within the wildlife analysis area or in the immediate vicinity of these areas. The following sections (i.e., big game species, small game species, nongame species, migratory birds, including raptors, and USFS MIS) include baseline descriptions of both resident and migratory wildlife species that have either been documented within the wildlife analysis area or that may occur within the wildlife analysis area based on habitat associations. Detailed species descriptions by Project region are presented in Section 3.7.5, Regional Summary. Amphibians and fish are addressed in Sections 3.9, Aquatic Biological Resources, and 3.10, Special Status Aquatic Species.

3.7.4.1 Big Game Species

Big game species that occur within the big game analysis area include pronghorn, mule deer, white-tailed deer, elk, moose, Rocky Mountain bighorn sheep, desert bighorn sheep, black bear, and mountain lion

Table 3.7-3 Vegetation Communities/Habitat Types Within National Forests Crossed by the Project

Vegetation Community/ Habitat Type	Ashley National Forest Region II		Dixie National Forest Region III		Fishlake National Forest Region II		Manti-La Sal National Forest Region II		Uinta-Wasatch-Cache National Forest Region II	
	Acres	Percent of Forest	Acres	Percent of Forest	Acres	Percent of Forest	Acres	Percent of Forest	Acres	Percent of Forest
1. Agriculture Land	2,691	0.2	629	<0.1	623	<0.1	1,466	0.1	290	<0.1
2. Aspen Forest and Woodland	102,261	7.7	196,825	10.5	196,958	13.5	234,483	17.5	231,663	25.9
3. Barren/Sparsely Vegetated	136,429	10.2	26,266	1.4	11,977	0.8	16,519	1.2	11,182	1.2
4. Cliff and Canyon	39,266	2.9	93,023	4.9	38,891	2.7	43,352	3.2	25,335	2.8
5. Conifer Forest	543,194	40.7	537,641	28.5	224,021	15.4	289,618	21.7	114,549	12.8
6. Deciduous Forest	1,125	0.1	0	0.0	1	<0.1	0	0.0	28,171	3.1
7. Desert Shrub	0	0.0	5,265	0.3	121	<0.1	1	<0.1	0	0.0
8. Developed/Disturbed[1]	42,056	3.1	26,479	1.4	28,664	2.0	4,505	0.3	497	0.1
9. Dunes	23	<0.1	2	<0.1	0	0.0	0	0.0	0	0.0
10. Grassland	1,591	0.1	2,010	0.1	7,453	0.5	104	<0.1	3,211	0.4
11. Greasewood Flat	1,891	0.1	19	<0.1	306	<0.1	80	<0.1	0	0.0
12. Herbaceous Wetland	28,424	2.1	4,438	0.2	4,530	0.3	2,789	0.2	15,225	1.7
13. Montane Grassland	25,557	1.9	12,854	0.7	9,129	0.6	26,225	2.0	26,455	3.0
14. Montane Shrubland	36,831	2.8	106,207	5.6	211,109	14.5	230,868	17.3	168,362	18.8
15. Open Water	21,383	1.6	2,445	0.1	4,334	0.3	2,282	0.2	16,673	1.9
16. Pinyon-Juniper	104,031	7.8	521,470	27.7	426,154	29.3	265,022	19.8	50,613	5.7
17. Riparian	119	<0.1	0	0.0	0	0.0	0	0.0	0	0.0
18. Sagebrush Shrubland	200,159	15.0	315,223	16.7	270,972	18.6	192,203	14.4	187,523	20.9
19. Saltbush Shrubland	15,422	1.2	497	<0.1	2,738	0.2	2,814	0.2	71	<0.1
20. Tundra	17,639	1.3	16,504	0.9	7,664	0.5	18,793	1.4	57	<0.1
21. Woody Riparian and Wetlands	15,120	1.1	15,660	0.8	8,234	0.6	6,028	0.5	15,377	1.7
Totals	**1,335,210**	**100**	**1,883,453**	**100**	**1,453,879**	**100**	**1,337,152**	**100**	**895,255**	**100**

[1] The developed/disturbed vegetation community is not considered to be typical wildlife habitat and is not included in analyses.

(BLM 2008; Fitzgerald et al. 2011; NDOW 2011; UDWR 2009a,b). Population numbers for these big game species typically fluctuate from year to year and depend on habitat conditions such as forage quality, water availability, and cover as well as weather patterns. The big game analysis area contains numerous big game seasonal habitats including migration corridors, production/parturition areas, and crucial winter range. Big game migration corridors and crucial winter range (defined as severe winter habitat in Colorado) have been identified by the WGFD, CPW, UDWR, and NDOW and are typically considered the most important and limiting habitats for big game species, especially during harsh winters with extremely cold temperatures and above average snow depths. Additional habitats such as parturition range (e.g., calving and fawning areas) may also be limiting in portions of the big game analysis area. Details on big game species and seasonal habitats found within the big game analysis area are presented below.

Pronghorn

Pronghorn inhabit grassland, desert shrubland, and sagebrush shrubland in flat to rolling topography and browse on grass, forbs, and shrubs, especially sagebrush, throughout the year. Pronghorn are prominent in portions of the big game analysis area with adequate forage and surface water (BLM 2008; Fitzgerald et al. 2011). During the winter, pronghorn generally utilize areas of relatively high sagebrush densities and overall low snow accumulations, on south- and west-facing slopes.

Mule Deer

Mule deer occur throughout the big game analysis area, but are concentrated in areas of rolling terrain and forested habitats (BLM 2008; Fitzgerald et al. 2011). A variety of vegetation communities provide suitable habitat for mule deer. These vegetation communities include aspen forests and woodlands, conifer forests, shrublands, and pinyon-juniper woodlands. Although their diet varies somewhat by season, mule deer are primarily browsers, feeding on a wide variety of woody vegetation including shoots, leaves, and twigs of shrubs and trees. Like pronghorn, winter habitat for mule deer occurs in areas of relatively high sagebrush densities and overall low snow accumulation, on south- and west-facing slopes.

White-tailed Deer

White-tailed deer occur in portions of the big game analysis area and are typically found near woody riparian and wetland areas in south-central Wyoming and northwestern Colorado (Fitzgerald et al. 2011). White-tailed deer feed on a variety of plant species but tend to rely heavily on agricultural fields, depending on the type of forage present (e.g., alfalfa, wheat, etc.). Winter habitat is typically low elevation riparian corridors and agricultural fields (BLM 2008). White-tailed deer are expanding their population westward in Wyoming and have increased in numbers considerably in the past 5 to 10 years in the North Platte River drainage. In northwestern Colorado, white-tailed deer are expanding their populations in agricultural areas along the Yampa River.

Elk

Elk occur in portions of the big game analysis area and are typically found in forested habitats, although in southern Wyoming and northwestern Colorado elk are found in large herds during the winter months in open sagebrush shrublands and grasslands (BLM 2008; CDOW 2011). Winter habitat for elk typically consists of low elevation rolling hills, meadows, and agricultural fields. However, unlike pronghorn and mule deer, elk are not as susceptible to harsh winter conditions due to their nutritional requirements and large body size and will often remain at higher elevations until snow depths reach approximately 16 inches (Fitzgerald et al. 2011).

Moose

Moose occur within the big game analysis area in portions of Wyoming and Utah (Fitzgerald et al. 2011; UDWR 2009b). This species is found in forested areas, primarily along riparian areas with abundant willow habitat. In Wyoming, this species has increased in numbers in the Baggs area along the Little Snake River as moose populations from the Park Range expand into southwestern Wyoming. Moose feed on a wide

variety of plants including trees, shrubs, grasses, forbs, algae, and other aquatic plants (Fitzgerald et al. 2011; UDWR 2009b). Generally, moose are not as susceptible to severe winter conditions as other big game animals due to their large body size that allows them to forage in deep snow. Consequently, many moose populations in Utah are found in the same habitats year-round (UDWR 2009b).

Rocky Mountain Bighorn Sheep

Rocky Mountain bighorn sheep occur in portions of the big game analysis area in Utah (UDWR 2008) and Colorado (CPW 2012), and are listed as USFS sensitive in the Uinta National Forest. This species is found in a variety of habitats from alpine to lower elevation foothills. Rocky Mountain bighorn sheep typically occupy steep, inaccessible habitat that provides them vantage points for predator detection and escape cover (CDOW 2009; Fitzgerald et al. 2011; UDWR 2008). This species feeds primarily on grasses, shrubs, and some forbs depending on the elevation of occupied habitat. Winter range for Rocky Mountain bighorn sheep typically consists of low elevation south-facing slopes that are blown free of snow cover. Rocky Mountain bighorn sheep are gregarious and exhibit high site-fidelity. In many areas of their range, this species spends the winter months in the same localized winter habitat each year (CDOW 2009; Fitzgerald et al. 2011; UDWR 2008).

Desert Bighorn Sheep

Desert bighorn sheep may occur within the big game analysis area in Utah and Nevada (NDOW 2001; UDWR 2008), and are listed as USFS sensitive in the Dixie, Fishlake, and Manti-LaSal National Forests. This species is found in desert shrubland and barren/sparsely vegetated habitats and is most common in steep, rocky terrain with abundant grass and browse (NDOW 2001; UDWR 2008). Water sources are often limited in desert bighorn sheep habitat; therefore, this species may occupy habitats near streams, springs, and man-made water sources (i.e., guzzlers) during the summer months (NDOW 2001). The diet of the desert bighorn sheep is similar to that of the Rocky Mountain bighorn sheep and consists primarily of grasses, shrubs, and forbs (NDOW 2001; UDWR 2008). Due to the geographic range of the desert bighorn sheep, use of seasonal habitats is primarily determined by water and forage availability rather than weather patterns and snow depth (UDWR 2008).

Black Bear

Black bear are classified as a big game species in Wyoming, Colorado, and Nevada. In Utah, black bear are managed under the furbearer program which provides certain protections. The species is fairly common within the big game analysis area, especially in forested, woody riparian, wetland areas along perennial water bodies (Fitzgerald et al. 2011). Black bears generally occur at low densities in habitats found within the big game analysis area and their distribution is dependent on existing and ongoing disturbance and on available food sources.

Mountain Lion

Mountain lions are classified as a big game species in Wyoming, Colorado, and Nevada. In Utah, mountain lions are managed under the furbearer program which provides certain protections. The species is fairly common within the big game analysis area, especially in forested, woody riparian and wetland areas along perennial water bodies (Fitzgerald et al. 2011). Mountain lions generally occur at low densities in habitats found within the big game analysis area and their distribution is dependent on available food sources, primarily mule deer.

3.7.4.2 Small Game Species

Small game species that occur within the wildlife analysis area include upland game birds, small mammals, furbearers, and waterfowl.

Upland Game Birds

Upland game bird species that occur within the wildlife analysis area include greater sage-grouse, Columbian sharp-tailed grouse, dusky grouse, ruffed grouse, chukar, ring-necked pheasant, wild turkey, Gambel's quail, California quail, band-tailed pigeon, and mourning dove. The greater sage-grouse is a federal candidate species, as well as a BLM, USFS, and Utah state sensitive species and is discussed in Section 3.8, Special Status Wildlife Species. The Columbian sharp-tailed grouse also is a BLM and Utah state sensitive species and is discussed in Section 3.8, Special Status Wildlife Species. Dusky grouse are found in forested areas of Wyoming, Colorado, and Utah in areas that contain aspen, chokecherry, serviceberry, Douglas-fir, lodgepole pine, and spruce/fir vegetation types (Kingery 1998; Stokes and Stokes 1996). Ruffed grouse are found in forested habitats in central Utah in areas that have a mixture of deciduous and coniferous trees (UDWR 2011). Chukars are found in central and western Utah, and Nevada in dry, rocky terrain with abundant cheatgrass (UDWR 2003). Depending on weather conditions, this species is often found near water sources (e.g., guzzlers, springs, seeps) in drainages that have sufficient escape cover. Ring-necked pheasants are found in the agricultural areas of central Utah and are relatively common in areas that provide sufficient cover (e.g., weedy fields, fence rows, grain fields, wetlands, ditches). Wild turkeys are found in Colorado, Utah, and Nevada and are typically associated with ponderosa pine and oakbrush habitats but also may be found in riparian and agricultural areas with suitable trees for roosting (Kingery 1998; UDWR 2011). The wild turkey is also identified as a MIS for the Dixie National Forest. Gambel's quail are found in Colorado, Utah, and Nevada, while California quail are found in Utah and Nevada (Stokes and Stokes 1996; UDWR 2011). These two species of quail occupy similar brushy habitats near riparian areas (Stokes and Stokes 1996). Band-tailed pigeons occur in Colorado and Utah in forests and mountain shrub habitats, primarily ponderosa pine and oakbrush (Kingery 1998). Mourning doves occur in habitats ranging from deciduous forests to shrubland and grassland communities, often nesting in trees or shrubs near riparian areas or water sources (Stokes and Stokes 1996). Most upland game bird species feed on a wide variety of plant and insect species depending on the time of year (i.e., insects during the spring and summer and leaves and seeds during the fall and winter). Many of the species described above exhibit annual population fluctuations depending on habitat conditions and weather patterns.

Small Game Mammals

Small game mammals that are likely to occur within the wildlife analysis area include mountain cottontail, desert cottontail, snowshoe hare, black-tailed jackrabbit, white-tailed jackrabbit, and pine squirrel (Fitzgerald et al. 2011). These species occupy a wide variety of habitats from high elevation coniferous forests to low elevation deserts and sagebrush shrubland. Most of these species are fairly abundant within suitable habitat and their populations typically follow a cyclical pattern that exhibits highs and lows at approximately 10-year intervals (Fitzgerald et al. 2011).

Furbearers

Furbearers likely to occur within the wildlife analysis area include beaver, muskrat, raccoon, striped skunk, long-tailed weasel, short-tailed weasel, badger, bobcat, coyote, mink, and red fox (BLM 2008; CDOW 2010; UDWR 2010). These species have wide distributions within the wildlife analysis area and are found within a variety of habitat types (e.g., sagebrush shrubland, desert shrub, pinyon-juniper, montane shrubland, grassland, etc.). The distribution of furbearers within the wildlife analysis area is typically determined by available food sources (e.g., small rodents, fish, insects, waste grain, human trash). The Canada lynx is listed as threatened, BLM sensitive and Utah state sensitive, and Colorado state endangered and is discussed in detail in Section 3.8, Special Status Wildlife Species.

Waterfowl

The wildlife analysis area is located within the Central and Pacific Flyways. Common waterfowl species that may occur within the wildlife analysis area include Canada goose, mallard, green-winged teal, northern pintail, gadwall, American widgeon, and common goldeneye. Other common summer residents include blue-winged teal, cinnamon teal, northern shoveler, redhead, ring-necked duck, and sandhill crane

(Cerovski et al. 2004; Floyd et al. 2007; Kingery 1998; Stokes and Stokes 1996). These species distributions are limited to the rivers, streams, lakes, reservoirs, ponds, and wetlands found within the wildlife analysis area. Population numbers for these species vary annually, based on available habitat and weather patterns. While waterfowl species are considered game birds, they also are protected under the MBTA.

3.7.4.3 Nongame Species

A diversity of nongame species (e.g., small mammals, raptors, passerines, and reptiles) occupies a variety of habitat types within the wildlife analysis area. Nongame species serve as predators, prey, and scavengers in ecosystems. Common nongame wildlife species include birds and small mammals such as bats, voles, chipmunks, gophers, woodrats, ground squirrels, and mice. These species provide a substantial prey base for predators within the wildlife analysis area including larger mammals (coyote, badger, bobcat), raptors (eagles, hawks, falcons, owls), and reptiles (snakes). Nongame small mammals that are further classified as sensitive are discussed in Section 3.8, Special Status Wildlife Species. A number of bat species also occurs within the wildlife analysis area (Bradley et al. 2006; Cerovski et al. 2004; Fitzgerald et al. 2011; Oliver 2000; WGFD 2010) and, with the exception of little brown myotis, these species are state protected, BLM sensitive, or USFS sensitive and are discussed in Section 3.8, Special Status Wildlife Species.

Raptors and Other Migratory Birds

Nongame birds encompass a variety of passerine and raptor species, including migratory bird species that are protected under the Migratory Bird Treaty Act (16 U.S.C. 703-711) and Executive Order (EO) 13186 (66 FR 3853). In addition, bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 et seq.). Pursuant to EO 13186, both the BLM and USFS have signed MOUs with the USFWS that outline a collaborative approach to promote the conservation of migratory bird populations. The purpose of the MOUs is to strengthen migratory bird conservation by identifying and implementing strategies that promote conservation and avoid or minimize adverse impacts on migratory birds in coordination with state, tribal, and local governments. These MOUs identify specific activities where cooperation between the BLM, USFS, and USFWS would contribute to the conservation of migratory birds and their habitat. Specific activities outlined in the MOUs include but are not limited to:

- Follow the USFWS Bald Eagle Management Guidelines as appropriate;
- Follow migratory bird conservation measures as they are developed by the USFWS;
- Work collaboratively to identify and address issues affecting migratory bird Species of Concern;
- Evaluate the effects of proposed project actions on migratory birds during the NEPA process.

In order to comply with all applicable regulatory requirements outlined by the EO 13186 and the associated MOUs, TWE has committed to developing an operational policy and a comprehensive strategy for collecting data, minimizing impacts, and mitigating loss of migratory birds and essential habitats prior to the initiation of construction. This policy and strategy will be incorporated into a single, over-arching document (Avian Protection Plan or Bird Conservation Strategy) that will include a full listing of all minimization measures included in this EIS, as well as recommendations from the USFWS and additional information included within the Avian Protection Plan Guidelines, developed by the USFWS and APLIC in 2005 (APLIC 2012).

Raptor species that could potentially occur as residents or migrants within the wildlife analysis area include eagles (bald and golden eagles), buteos (e.g., red-tailed hawk, Swainson's hawk, ferruginous hawk), falcons (e.g., prairie falcon, peregrine falcon, American kestrel), accipiters (e.g., northern goshawk, Cooper's hawk, sharp-shinned hawk), owls (e.g., great-horned owl, burrowing owl, long-eared owl, short-eared owl, flammulated owl), northern harrier, and osprey (Floyd et al. 2007; Herron et al. 1985;

Kingery 1998; Stokes and Stokes 1996; WGFD 2008). Special status raptor species are discussed in Section 3.8, Special Status Wildlife Species.

A variety of migratory birds occur within the wildlife analysis area throughout the year; however, they are most abundant during migration, as well as during the breeding season. Migratory bird breeding season for the wildlife analysis area generally is January 1 to August 15, depending on latitude and elevation, as well as seasonal weather conditions (Floyd et al. 2007; Kingery 1998; Nicholoff 2003). Representative bird species that occur throughout the wildlife analysis area include great blue heron, horned lark, barn swallow, black-billed magpie, common raven, western meadowlark, green-tailed towhee, American goldfinch, and red-winged blackbird (Floyd et al. 2007; Kingery 1998; Stokes and Stokes 1996; WGFD 2008). Migratory bird species that are further classified as federally-listed, candidate, state-listed, BLM sensitive, or USFS sensitive are discussed in Section 3.8, Special Status Wildlife Species.

USFWS Birds of Conservation Concern

A list of Birds of Conservation Concern (BCC) was developed as a result of a 1988 amendment to the Fish and Wildlife Conservation Act. This Act mandated that the USFWS "identify species, subspecies, and populations of all migratory nongame birds that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973." The goal of the BCC list is to prevent or remove the need for additional ESA bird listings by implementing proactive management and conservation actions, and that these species would be consulted on in accordance with EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds (USFWS 2008).

The wildlife analysis area is located within Bird Conservation Regions (BCR) 9 (Great Basin), 10 (Northern Rockies), 16 (Southern Rockies/Colorado Plateau), and 33 (Sonoran and Mohave Deserts). These BCR regions contain a wide variety of habitats from high elevation coniferous forests and alpine tundra to low elevation desert and sagebrush shrublands. Due to this habitat diversity, a large number of migratory birds are found year-round or during migration within these regions. The wildlife analysis area falls within a major migration corridor for bird species, which travel to and from western Canada through the U.S. to Mexico and Central and South America (USFWS 2008).

Within each BCR, BHCAs are specifically identified. BHCAs are grouped into three categories of priority, A, B and C, as defined below. Three criteria were used to rank these habitat areas: 1) statewide importance to birds; 2) degree of threat; and 3) opportunities (funding, partnerships, and feasibility for habitat protection, restoration, and enhancement). The three habitat categories were defined as:

- Priority A: High threat, high opportunity, and/or high value to birds statewide
- Priority B: One criterion may be high; generally the habitat is of moderate concern
- Priority C: Relatively low threat, low opportunity, and/or low value as habitat statewide

BHCAs have no official status, but are important as areas where state partners believe the best opportunity exists for effective conservation activities (IMJV 2005). Potential temporary and long-term impacts to BHCAs can result in lost opportunities for conservation efforts. In order to address this loss of conservation opportunity, BHCAs will be identified in the TWE Avian Protection Plan and prioritized as areas for potential compensatory mitigation. A total of 7 BHCAs are crossed by the 250-foot-wide transmission line ROW for all alternatives. A total of 26 BHCAs are crossed by the 2-mile transmission line corridor for all alternatives. A total of 47 BHCAs are partially or completely within the wildlife analysis area. BHCAs that are crossed by the 250 foot-wide transmission line ROW and examples of BCC species that may be found within them are presented in Section 3.7.5, Regional Summary, and on **Figure 3.7-1**.

Partners in Flight Priority Bird Species

The national Partners in Flight (PIF) program began in 1989 as a coordinated effort to document and reverse apparent population declines for neotropical migratory birds that breed north of Mexico and then

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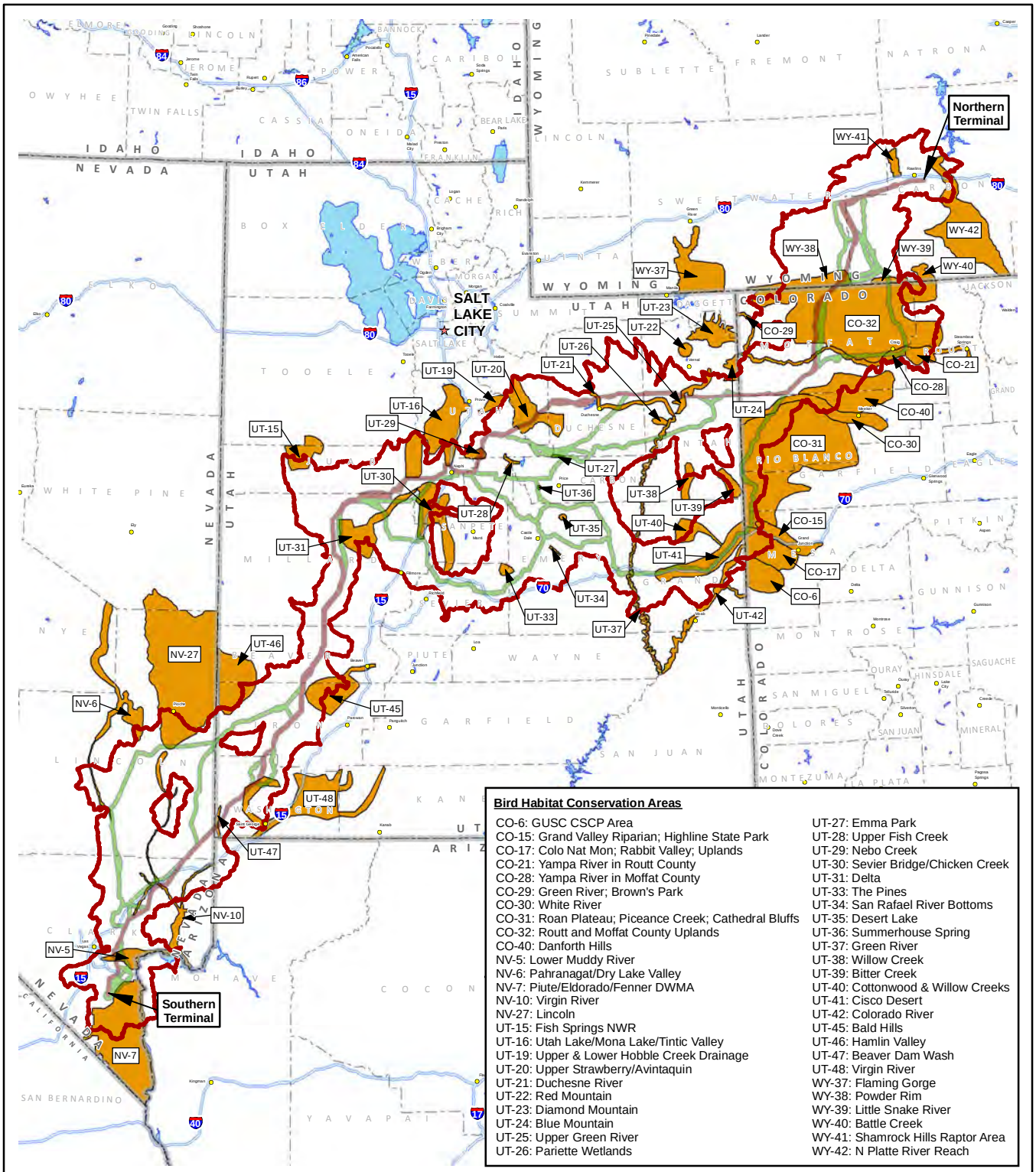
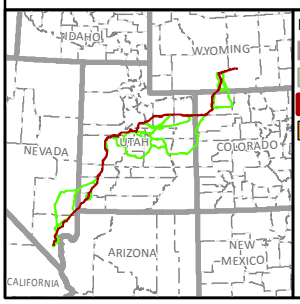


Bird Habitat Conservation Areas

CO-6: GUSC CSCP Area
CO-15: Grand Valley Riparian; Highline State Park
CO-17: Colo Nat Mon; Rabbit Valley; Uplands
CO-21: Yampa River in Routt County
CO-28: Yampa River in Moffat County
CO-29: Green River; Brown's Park
CO-30: White River
CO-31: Roan Plateau; Piceance Creek; Cathedral Bluffs
CO-32: Routt and Moffat County Uplands
CO-40: Danforth Hills
NV-5: Lower Muddy River
NV-6: Pahranagat/Dry Lake Valley
NV-7: Piute/Eldorado/Fenner DWMA
NV-10: Virgin River
NV-27: Lincoln
UT-15: Fish Springs NWR
UT-16: Utah Lake/Mona Lake/Tintic Valley
UT-19: Upper & Lower Hobble Creek Drainage
UT-20: Upper Strawberry/Avintaquin
UT-21: Duchesne River
UT-22: Red Mountain
UT-23: Diamond Mountain
UT-24: Blue Mountain
UT-25: Upper Green River
UT-26: Pariette Wetlands
UT-27: Emma Park
UT-28: Upper Fish Creek
UT-29: Nebo Creek
UT-30: Sevier Bridge/Chicken Creek
UT-31: Delta
UT-33: The Pines
UT-34: San Rafael River Bottoms
UT-35: Desert Lake
UT-36: Summerhouse Spring
UT-37: Green River
UT-38: Willow Creek
UT-39: Bitter Creek
UT-40: Cottonwood & Willow Creeks
UT-41: Cisco Desert
UT-42: Colorado River
UT-45: Bald Hills
UT-46: Hamlin Valley
UT-47: Beaver Dam Wash
UT-48: Virgin River
WY-37: Flaming Gorge
WY-38: Powder Rim
WY-39: Little Snake River
WY-40: Battle Creek
WY-41: Shamrock Hills Raptor Area
WY-42: N Platte River Reach



Project Corridors

- Applicant Proposed
- Alternative
- Project Analysis Area
- Bird Habitat Conservation Area (BHCA)

TRANSWEST EXPRESS TRANSMISSION PROJECT

Figure 3.7-1
Bird Habitat Conservation Areas (BHCA)

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Western AREA POWER ADMINISTRATION

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migrate to Mexico, Central and South America, and the Caribbean in the winter months (Colorado Partners in Flight 2000; Neel 1999; Nicholoff 2003; Utah Steering Committee Intermountain West Joint Venture 2005). Examples of PIF Priority Bird Species that may be found within the wildlife analysis area in each Project region are presented in Section 3.7.5, Regional Summary.

Audubon Important Bird Areas

The Important Bird Areas (IBAs) program was initiated by BirdLife International in Europe in the 1980s. Since then, over 8,000 sites in 178 countries have been identified as Important Bird Areas. As the U.S. Partner of BirdLife International, the National Audubon Society administers the IBA Program in the U.S. Audubon launched its IBA initiative in 1995. State-based IBA programs provide the flexibility to tailor the program to individual state needs (National Audubon Society 2011).

IBAs are sites that provide essential habitat for one or more species of birds. They include sites for breeding, wintering, and/or migrating birds. IBAs may be a few acres or thousands of acres, but usually are discrete sites that stand out from the surrounding landscape. IBAs may include public or private lands, or both, and they may be protected by local, state, or national regulations (National Audubon Society 2011).

To qualify as an Important Bird Area, sites must satisfy at least one of the following criteria. The site must support:

- Species of conservation concern (e.g. threatened and endangered species);
- Restricted-range species (species vulnerable because they are not widely distributed);
- Species that are vulnerable because their populations are concentrated in one general habitat type or biome; or
- Species, or groups of similar species (such as waterfowl or shorebirds), that are vulnerable because they occur at high densities due to their behavior and habitat requirements.

A summary of IBAs that are within the wildlife analysis area in each Project region are presented in Section 3.7.5, Regional Summary. **Figure 3.7-2** displays IBAs within the wildlife analysis area.

Reptiles

Potential habitat for reptiles within the wildlife analysis area includes nearly all of the vegetative communities present, with the exception of high elevation coniferous forests and tundra. Species that could potentially occur within the wildlife analysis area include the desert horned lizard; Great Basin collared lizard, northern sagebrush lizard, bull snake, and prairie rattlesnake (Baxter and Stone 1980; Hammerson 1999; NDOW 2012). Sensitive reptile species are discussed in Section 3.8, Special Status Wildlife Species.

USFS Management Indicator Species

A Management Indicator Species (MIS) is a plant or animal species selected because its status is believed to: 1) be indicative of the status of a larger group of species; 2) be reflective of the status of a key habitat type; or 3) act as an early warning of an anticipated stressor to ecological integrity. The key characteristics of MIS are that their status and trend provide insights to the integrity of the larger ecological system to which they belong. Wildlife species that have been selected as MIS for the national forests crossed by the project are presented in **Table 3.7-4**. Seven MIS also are categorized as special status species and are presented in Section 3.8, Special Status Wildlife Species. Mule deer and Rocky Mountain elk are analyzed as big game species.

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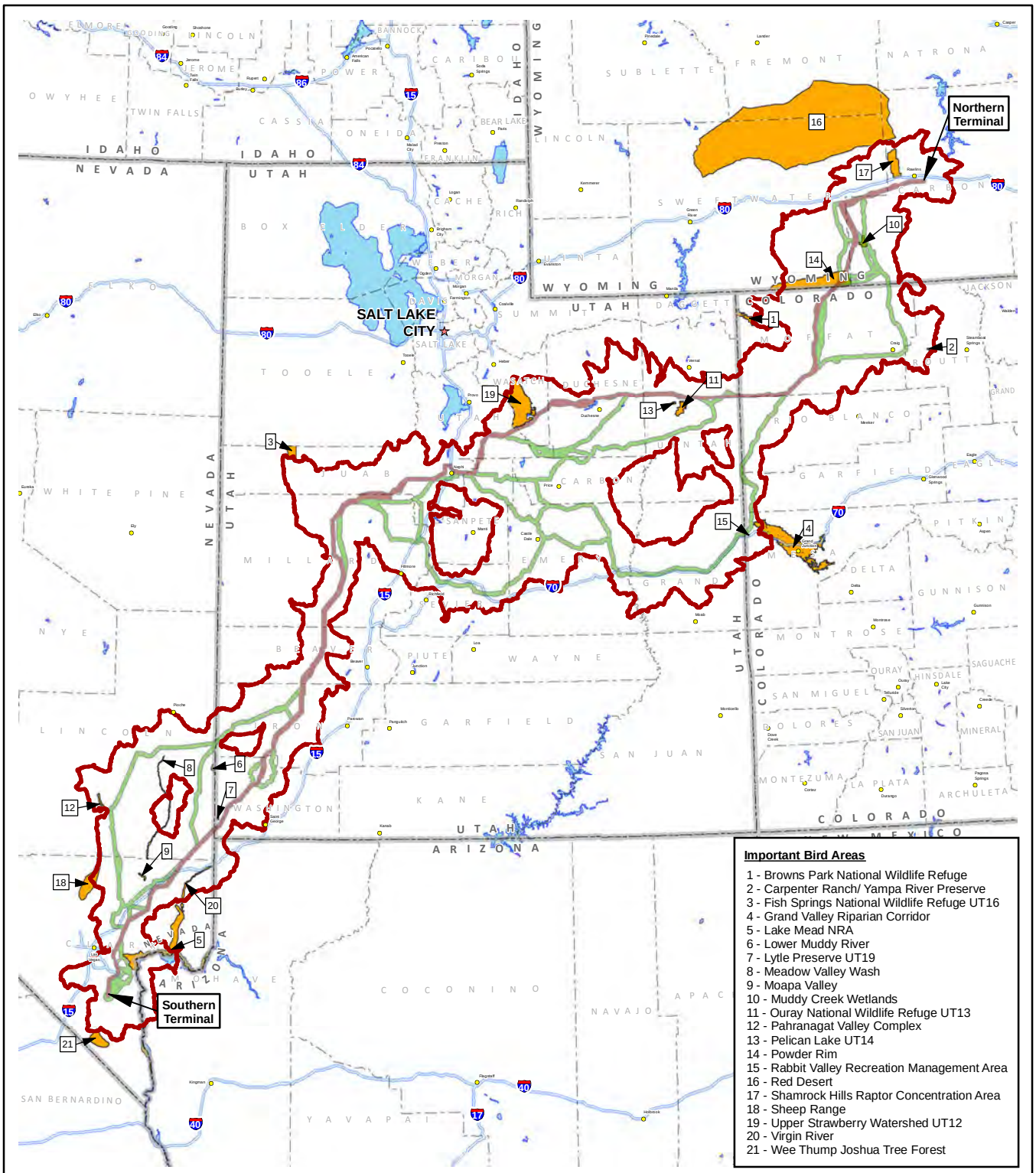

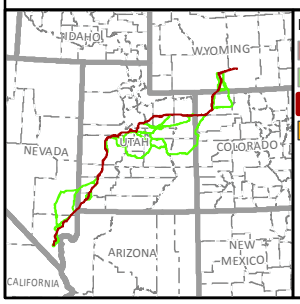

Project Corridors

- Applicant Proposed
- Alternative
- Project Analysis Area
- Important Bird Area (IBA)

TRANSWEST EXPRESS TRANSMISSION PROJECT

Figure 3.7-2
Important Bird Areas

0 20 40 80 Miles
0 20 40 80 km
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Western AREA POWER ADMINISTRATION

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Table 3.7-4 USFS Management Indicator Species for National Forests Crossed by the 2-mile Transmission Line Corridor

Species/Habitat Association[1]	Scientific Name	Ashley National Forest Region II	Dixie National Forest Region III	Fishlake National Forest Region II	Manti-LaSal National Forest Region II	Uinta-Wasatch-Cache National Forest Region II
Mammals						
American beaver Habitat category: 15, 21	*Castor Canadensis*					MIS
Mule deer Refer to Section 3.7.4.1	*Odocoileus hemionus*	MIS	MIS	MIS	MIS, Big Game	
Elk Refer to Section 3.7.4.1	*Cervus Canadensis*	MIS	MIS	MIS	MIS, Big Game	
Birds						
Northern goshawk Habitat category: 2, 5, 6	*Accipiter gentilis*	MIS, USFS, BLM, NV-P, UT-SS Tier I	MIS, USFS, BLM, NV-P, UT-SS Tier I	MIS, USFS, BLM, NV-P, UT-SS Tier I	MIS, USFS, BLM, NV-P, UT-SS Tier I	MIS, USFS, BLM, NV-P, UT-SS Tier I
Golden eagle Habitat category: 1, 4, 7, 10, 13, 14, 16, 18, 19, 20	*Aquila chrysaetos*	MIS, BLM			MIS, BLM	
Greater sage-grouse Habitat category: 18	*Centrocercus urophasianus*	MIS, FC, BLM, USFS, UT-SS Tier I				
White-tailed ptarmigan Habitat category: 20	*Lagopus leucura*	MIS				
Wild turkey Habitat category: 1, 2, 5, 6, 7, 10, 11, 13, 16, 19, 21	*Meleagris gallopavo*		MIS			
Red-naped sapsucker Habitat category: 2, 5, 6, 21	*Sphyrapicus nuchalis*	MIS, BLM				
Hairy woodpecker Habitat category: 1, 2, 6, 16, 21	*Picoides villosus*			MIS		
American three-toed woodpecker Habitat category: 5	*Picoides dorsalis*					MIS, BLM, USFS, UT-SS Tier II
Northern flicker Habitat category: 1, 2, 5, 6, 12, 16, 21	*Colaptes auratus*		MIS			
Warbling vireo Habitat category: 2, 16, 21	*Vireo gilvus*	MIS				
Western bluebird Habitat category: 1, 2, 5, 6, 10, 13, 16, 19, 21	*Sialia Mexicana*			MIS		
Mountain bluebird Habitat category: 1, 2, 5, 6, 10, 13, 16, 19, 21	*Sialia currucoides*			MIS		
Sage thrasher Habitat category: 18	*Oreoscoptes montanus*			MIS, BLM		
Yellow warbler Habitat category: 2, 6, 16, 19, 21	*Dendroica petechia*			MIS		
MacGillivray's warbler Habitat category: 2, 6, 16, 19, 21	*Oporornis tolmiei*			MIS		
Brewer's sparrow Habitat category: 18	*Spizella breweri*			MIS		

Table 3.7-4 USFS Management Indicator Species for National Forests Crossed by the 2-mile Transmission Line Corridor

Species/Habitat Association[1]	Scientific Name	Ashley National Forest Region II	Dixie National Forest Region III	Fishlake National Forest Region II	Manti-LaSal National Forest Region II	Uinta-Wasatch-Cache National Forest Region II
Vesper sparrow Habitat category: 1, 10, 13, 18	*Pooecetes gramineus*			MIS, BLM		
Song sparrow Habitat category: 1, 2, 5, 6, 10, 11, 12, 13, 14, 16, 17, 18, 19, 21	*Melospiza melodia*	MIS		MIS		
Lincoln's sparrow Habitat category: 2, 12, 16, 19, 21	*Melospiza lincolnii*			MIS		

[1] Habitat association refers to vegetation communities (by number) as presented in **Table 3.7-2**.

Note: Status is defined as: BLM = BLM Sensitive, USFS = USFS Sensitive, UT-SS = Utah Sensitive Species (Tier I and Tier II species are defined in Utah's Comprehensive Wildlife Strategy, NV-P = Nevada State Protected.

3.7.5 Regional Summary

As described in Section 3.7.4, Baseline Description, a wide variety of wildlife habitats and species is found within the three analysis areas. Many of these species are found over a wide geographic area in various habitat types and elevations found within the analysis areas. As described in Section 3.5, Vegetation, 20 habitat types associated with vegetation communities are found within the analysis areas and each Project region has several dominant habitat types (**Table 3.5-2**). Developed/disturbed land is not considered to be typical wildlife habitat and is not included in impact analyses. Given the habitat types present in each Project region, wildlife species and habitats specific to each region are summarized below.

The highest number of wildlife species occurs in Region II, due to elevation variation and associated habitat diversity. The potential occurrence of special status wildlife species by Project region is discussed in detail in Section 3.8.5, Regional Summary of Special Status Wildlife Species.

3.7.5.1 Big Game Species

As described in Section 3.7.4, Baseline Description, seven big game species are known to occur within the big game analysis area. A summary of big game species and habitat occurrence by Project region, including the terminal locations is provided below. The highest number of big game species occurs in Regions I and II, due to elevation fluctuations and associated habitat diversity. **Table 3.7-5** presents big game habitat present at the terminal siting areas.

Table 3.7-5 Big Game Habitat within the Terminal Siting Areas

Terminal	State	Species	Habitat Type	Acres with the Terminal Siting Area
Northern Terminal	Wyoming	Mule Deer	Crucial Winter/Yearlong Range	3,334
Southern Terminal Located near IPP (Design Option 2)	Utah	Pronghorn	Yearlong Crucial Range	639
Southern Terminal Located near IPP (Design Option 3)	Utah	Pronghorn	Yearlong Crucial Range	639
Proposed Alternative Southern Terminal	Nevada	None	N/A	N/A
Alternate Southern Terminal	Nevada	None	N/A	N/A

<u>Northern Terminal</u>

Table 3.7-6 presents big game habitat present at the Northern Terminal siting area.

Table 3.7-6 Big Game Habitat within the Northern Terminal Siting Area

State	Species	Habitat Type	Acres within the Northern Terminal Siting Area
Wyoming	Mule Deer	Crucial Winter/Yearlong Range	3,334

Proposed Alternative Southern Terminal

The Proposed Alternative Southern Terminal and associated facilities are sited almost entirely within developed/disturbed areas. Developed/disturbed land is not considered to be typical wildlife habitat and is not included in impact analyses. Less than 1 percent of the Southern Terminal siting area is within the desert shrub community. No big game species are known to occupy the Southern Terminal siting area.

Alternate Southern Terminal

The Alternate Southern Terminal and associated facilities are sited almost entirely within developed/disturbed areas. Developed/disturbed land is not considered to be typical wildlife habitat and is not included in impact analyses. Less than 1 percent of the Alternate Southern Terminal siting area is within the desert shrub community. No big game species are known to occupy the Alternate Southern Terminal siting area.

Southern Terminal located near IPP (Design Option 2)

The Southern Terminal located near IPP (Design Option 2) siting area is located within pronghorn yearlong crucial range.

Southern Substation located near IPP (Design Option 3)

The Southern Substation located near IPP (Design Option 3) is entirely within the boundaries of the Southern Terminal (Design Option 2). The Southern Substation would be located within pronghorn yearlong crucial range.

Region I

Species that occur within the Region I big game analysis area include pronghorn, mule deer, white-tailed deer, elk, moose, Rocky Mountain bighorn sheep, black bear, and mountain lion. Pronghorn, mule deer, and elk crucial winter range occurs within the big game analysis area throughout most of southern Wyoming, northwestern Colorado, and northeastern Utah. In addition, Rocky Mountain bighorn sheep crucial winter range occurs within the big game analysis area in northeastern Utah. Seasonal habitats within the Region I big game analysis area are presented in **Table 3.7-7** and on **Figure 3.7-3**.

Table 3.7-7 Habitat within the Big Game Analysis Area in Region I

State	Species	Habitat Type	Acres within Big Game Analysis Area
Wyoming	Pronghorn	Crucial Winter/Yearlong Range	485,710
	Mule Deer	Crucial Winter; Crucial Winter/ Yearlong Range	362,828
	Elk	Crucial Winter/Yearlong Range	206,076
Colorado	Pronghorn	Severe Winter Range	198,590
	Mule Deer	Severe Winter Range	677,309
	Elk	Severe Winter Range	1,016,686
	Elk	Parturition Range	370,140

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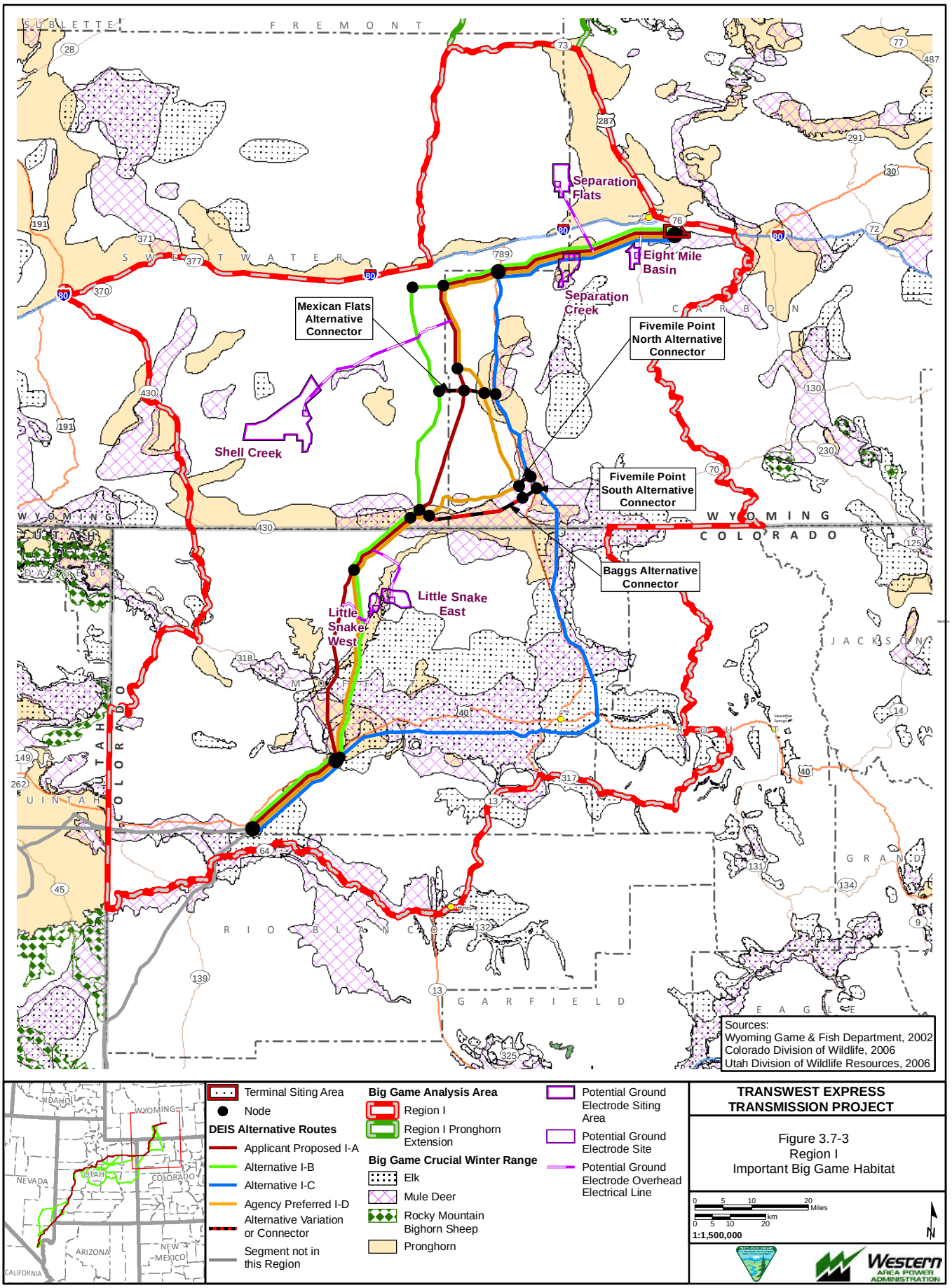

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Region II

Species that occur within the Region II big game analysis area include pronghorn, mule deer, elk, moose, Rocky Mountain bighorn sheep, desert bighorn sheep, black bear, and mountain lion. Pronghorn, mule deer, and elk crucial winter ranges occur within the big game analysis area in portions of western Colorado and eastern and central Utah. Moose crucial winter range occurs within the big game analysis area in central Utah in Sanpete County. Rocky Mountain bighorn sheep crucial winter range occurs within the big game analysis area primarily along the I-70 corridor in Grand County and in southern Wasatch and Duchesne counties, Utah. Desert bighorn sheep crucial winter range occurs within the big game analysis area in Emery County, Utah. Big game seasonal habitats within the Region II big game analysis area are presented in **Table 3.7-8** and on **Figure 3.7-4**.

Table 3.7-8 Habitats within the Big Game Analysis Area in Region II

State	Species	Habitat Type	Acres within Big Game Analysis Area
Colorado	Pronghorn	Severe Winter Range	15,494
	Mule Deer	Severe Winter Range	179,527
	Elk	Severe Winter Range	106,056
	Elk	Parturition Range	22,548
Utah	Pronghorn	Crucial Yearlong; Substantial Yearlong Range	6,081,343
	Pronghorn	Parturition Range	1,428,978
	Mule Deer	Crucial Winter Range	3,486,734
	Mule Deer	Parturition Range	3,511,145
	Elk	Crucial Winter Range	3,329,852
	Elk	Parturition Range	1,624,494
	Moose	Occupied	1,319,143
	Moose	Parturition Range	393,186
	Rocky Mountain Bighorn Sheep	Crucial Yearlong Range	1,781,886
	Desert Bighorn Sheep	Occupied	1,103,697

Region III

Species that occur within the Region III big game analysis area include pronghorn, mule deer, desert bighorn sheep, black bear, and mountain lion. Pronghorn and mule deer crucial winter range occurs within the big game analysis area throughout Region III in southwestern Utah and eastern Nevada. Desert bighorn sheep occupied habitat occurs within the big game analysis area in southern Nevada in Clark County. Big game seasonal habitats within the Region III big game analysis area are presented in **Table 3.7-9** and on **Figure 3.7-5**.

Table 3.7-9 Habitats within the Big Game Analysis Area in Region III

State	Species	Habitat Type	Acres within Big Game Analysis Area
Utah	Pronghorn	Crucial Yearlong Habitat	5,428,001
	Mule Deer	Crucial Winter Habitat	812,705
	Desert Bighorn Sheep	Occupied	67,786
Nevada	Pronghorn	Occupied	1,512,355
	Mule Deer	Occupied	250,417
	Desert Bighorn Sheep	Occupied[1]	564,735

[1] NDOW classifies desert bighorn sheep habitat as occupied, unoccupied, and potential habitat.

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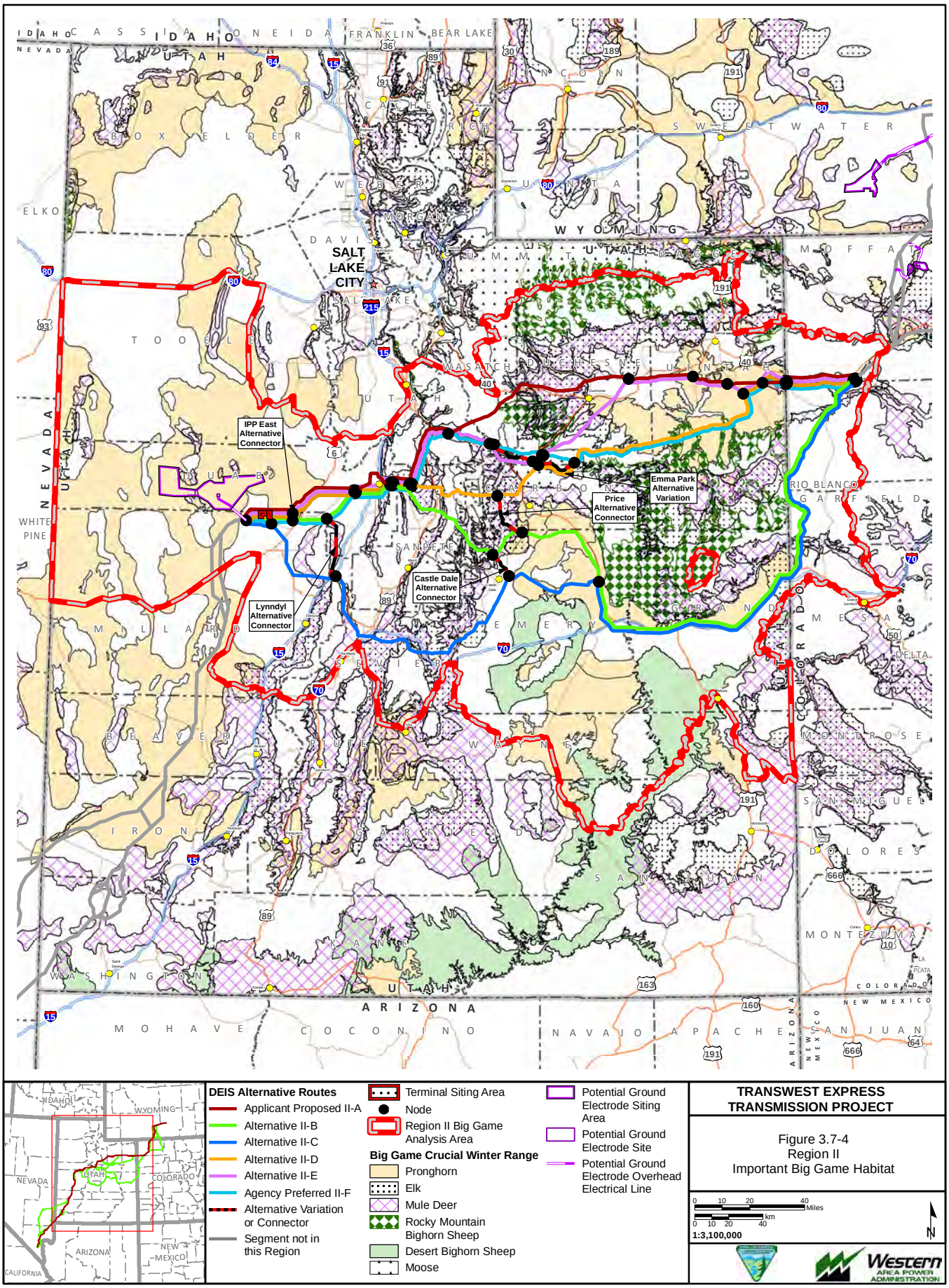

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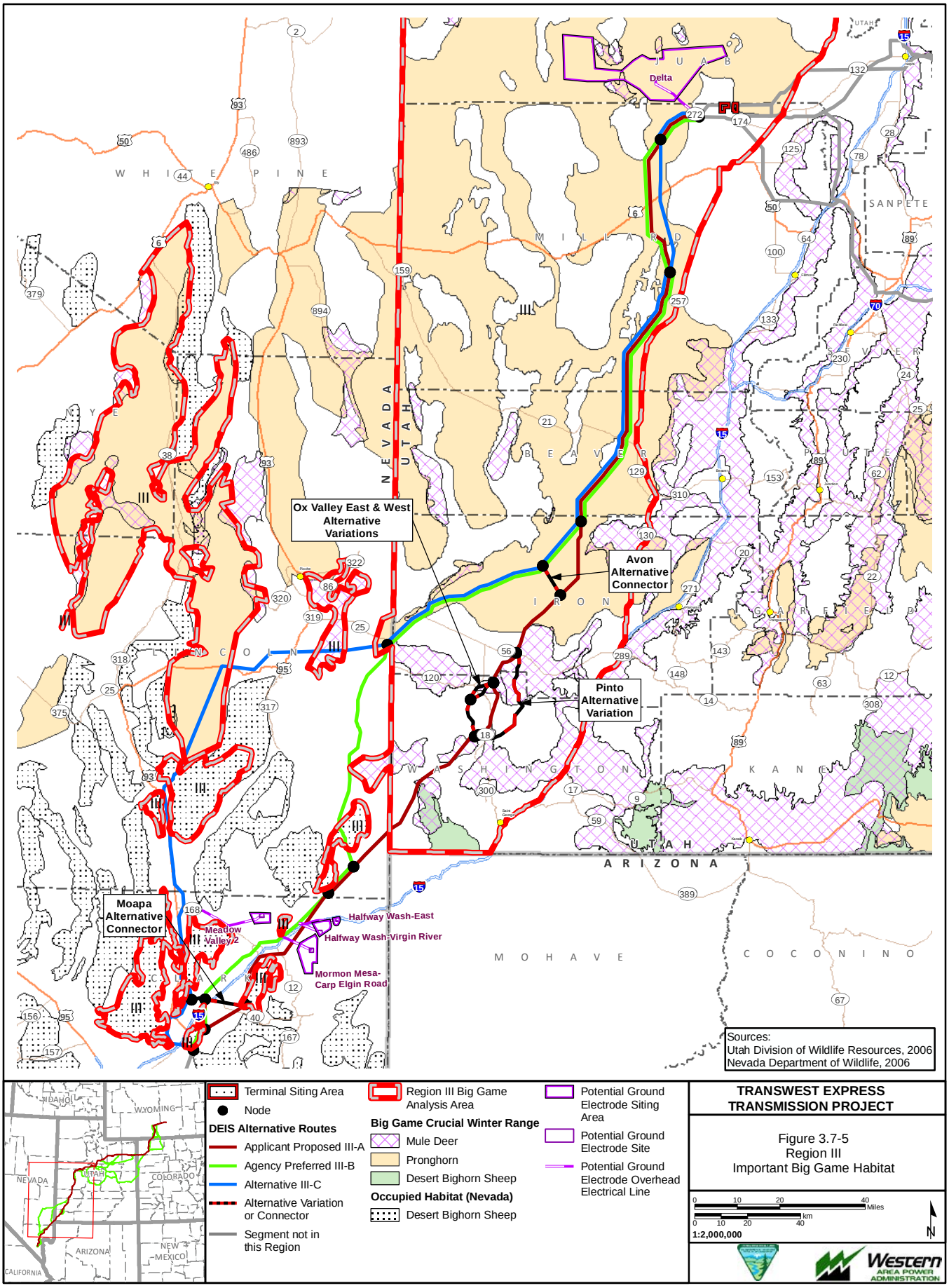

Terminal Siting Area
Node

DEIS Alternative Routes
- Applicant Proposed III-A
- Agency Preferred III-B
- Alternative III-C
- Alternative Variation or Connector
- Segment not in this Region

Region III Big Game Analysis Area

Big Game Crucial Winter Range
- Mule Deer
- Pronghorn
- Desert Bighorn Sheep

Occupied Habitat (Nevada)
- Desert Bighorn Sheep

Potential Ground Electrode Siting Area
Potential Ground Electrode Site
Potential Ground Electrode Overhead Electrical Line

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Figure 3.7-5
Region III
Important Big Game Habitat

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Region IV

Species that occur within the Region IV big game analysis area include desert bighorn sheep and mountain lion. Desert bighorn sheep occupied habitat occurs within the big game analysis area in the mountain ranges surrounding Las Vegas, Nevada. Desert bighorn sheep habitat within the Region IV big game analysis area is presented in **Table 3.7-10** and on **Figure 3.7-6**.

Table 3.7-10 Habitat within the Big Game Analysis Area in Region IV

State	Species	Habitat Type	Acres within Big Game Analysis Area
Nevada	Desert Bighorn Sheep	Occupied[1]	257,657

[1] NDOW classifies desert bighorn sheep habitat as occupied, unoccupied, and potential habitat.

3.7.5.2 Small Game Species

As described in Section 3.7.4, Baseline Description, numerous small game species are known to occur within the wildlife analysis area. A summary of small game species occurrence for the terminal siting areas and by Project region is provided below. The highest number of small game species occurs within the wildlife analysis area in Regions I and II due to topography and associated habitat diversity.

Northern Terminal

Representative small game species that may occur within the Northern Terminal siting area include upland game birds such as mourning dove; small game mammals such as desert cottontail, black-tailed jackrabbit, and white-tailed jackrabbit; furbearers such as badger, bobcat, and coyote; and waterfowl such as mallard, Canada goose, blue-winged teal, and pintail.

Proposed Alternative Southern Terminal

Representative small game species that may occur within the proposed alternative Southern Terminal siting area include upland game birds such as Gambel's quail, chukar, and mourning dove; small game mammals such as desert cottontail; furbearers such as raccoon and coyote; and waterfowl such as mallard, Canada goose, green-winged teal, gadwall, and pintail.

Alternate Southern Terminal

Representative small game species that may occur within the Alternate Southern Terminal siting area would be the same as for the proposed alternative Southern Terminal siting area.

Southern Terminal located near IPP (Design Option 2)

Representative small game species that may occur within the Southern Terminal located near IPP (Design Option 2) siting area include upland game birds such as dusky grouse, ruffed grouse, chukar, ring-necked pheasant, wild turkey, Gambel's quail, California quail, band-tailed pigeon, and mourning dove; small game mammals such as desert cottontail and white-tailed jackrabbit, furbearers such as bobcat, red fox, and coyote and waterfowl such as mallard, Canada goose, cinnamon teal, northern shoveler, and pintail.

Southern Substation located near IPP (Design Option 3)

The Southern Substation located near IPP (Design Option 3) is entirely within the boundaries of the Southern Terminal (Design Option 2) and representative small game species would be the same.

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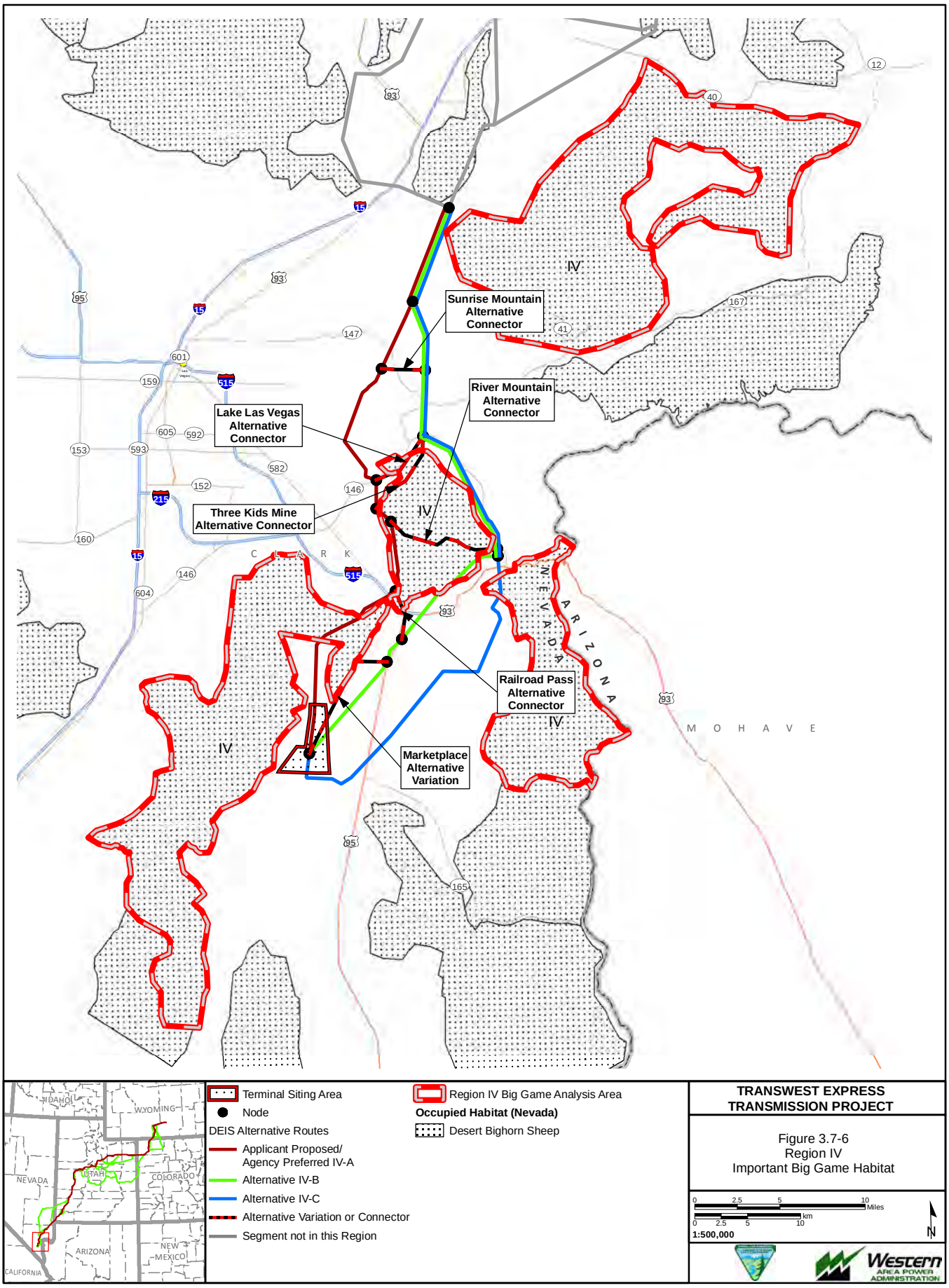

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Figure 3.7-6
Region IV
Important Big Game Habitat

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Region I

Representative small game species that may occur within the Region I wildlife analysis area include upland game birds such as dusky grouse, ruffed grouse, and mourning dove; small game mammals such as desert cottontail, black-tailed jackrabbit, and white-tailed jackrabbit; furbearers such as beaver, badger, bobcat, and coyote; and waterfowl such as mallard, Canada goose, blue-winged teal, and pintail. Region I is located within the Central Flyway in portions of Wyoming near Rawlins and the Pacific Flyway in southern Wyoming and northwestern Colorado. Due to the arid climate and limited water sources in Region I, waterfowl species are typically found in close relation to wetlands and riparian areas, such as Muddy Creek in Wyoming; the Little Snake and Yampa rivers in Colorado; and the Green River and its tributaries in northeastern Utah.

Region II

Representative small game species that may occur within the Region II wildlife analysis area include upland game birds such as dusky grouse, ruffed grouse, chukar, ring-necked pheasant, wild turkey, California quail, band-tailed pigeon, and mourning dove; small game mammals such as desert cottontail, snowshoe hare, furbearers such as beaver, muskrat, bobcat, red fox, and coyote; and waterfowl such as mallard, Canada goose, green-winged teal, gadwall, and pintail. Region II is located within the Pacific Flyway. The Ouray National Wildlife Refuge (NWR) is located in the wildlife analysis area near the Green River in Uintah County, Utah. The Ouray NWR area provides important habitat during migration for waterfowl that migrate along the Green River riparian corridor in eastern Utah (USFWS 2011). The White River and Douglas Creek also provide habitat for small game species and waterfowl.

Region III

Representative small game species that may occur within the Region III wildlife analysis area include upland game birds such as dusky grouse, chukar, wild turkey, California quail, Gambel's quail, band-tailed pigeon, and mourning dove; small game mammals such as desert cottontail and white-tailed jackrabbit; furbearers such as badger, bobcat, red fox, and coyote; and waterfowl such as mallard, Canada goose, cinnamon teal, northern shoveler, and pintail. Region III is located within the Pacific Flyway. Due to the arid climate and limited water sources in Region III, small game species are typically found in close relation to wetlands and riparian areas such as streams and lakes in the Dixie National Forest in Washington County, Utah and along the Muddy River in Clark County, Nevada.

Region IV

Representative small game species that may occur within the Region IV wildlife analysis area include upland game birds such as Gambel's quail, chukar, and mourning dove; small game mammals such as desert cottontail; furbearers such as raccoon and coyote; and waterfowl such as mallard, Canada goose, pintail, and northern shoveler. Region IV is located with the Pacific Flyway. Due to a lack of water sources and riparian and wetland habitats within the Region IV wildlife analysis area, most waterfowl use is limited to migrating individuals that utilize the Lake Mead National Recreation Area in eastern Clark County, Nevada.

3.7.5.3 Nongame Species

As described in Section 3.7.4, Baseline Description, numerous nongame species are known to occur within the wildlife analysis area. A summary of nongame species occurrence for the terminal siting areas and by Project region is provided below. The highest number of nongame species occurs within the wildlife analysis area in Regions I and II due to topography and associated habitat diversity.

Northern Terminal

Small Mammals

Representative nongame small mammal species that may be found within the Northern Terminal siting area include little brown myotis, Merriam's shrew, golden-mantled ground squirrel, least chipmunk, northern pocket gopher, Ord's kangaroo rat, white-tailed prairie dog, Wyoming ground squirrel, Wyoming pocket gopher, and olive-backed pocket mouse (Fitzgerald et al. 2011).

Raptors

Based on agency raptor nest data, three species of raptors have been documented nesting within 1 mile of the Northern Terminal siting area. These include burrowing owl, golden eagle, and prairie falcon. As special status raptor species, these are addressed in Section 3.8.4.3, Region I.

Other Migratory Birds

A wide variety of migratory bird species may be found within the Northern Terminal siting area. Representative species include horned lark, western flycatcher, lark sparrow, and American goldfinch.

Reptiles

Representative reptile species that may be found within the Northern Terminal siting area include sagebrush lizard, short-horned lizard, Great Basin gopher snake, bull snake, wandering garter snake, and prairie rattlesnake (Baxter and Stone 1980; Hammerson 1999).

Proposed Alternative Southern Terminal

Small Mammals

Representative nongame small mammal species that may be found within the Proposed Alternative Southern Terminal siting area include little brown myotis, desert shrew, white-tailed antelope squirrel, Botta's pocket gopher, brush mouse, and canyon mouse (Hall 1995).

Raptors

No raptor nests are known to occur within 1 mile of the Proposed Alternative Southern Terminal siting area.

Other Migratory Birds

Representative migratory bird species that may be found at the Proposed Alternative Southern Terminal siting area include rock wren, black-tailed gnatcatcher, black-throated sparrow, and verdin.

Reptiles

Representative reptile species that may be found within the Proposed Alternative Southern Terminal siting area include western fence lizard, common side-blotched lizard, and western rattlesnake (SDNHM 2011).

Alternate Southern Terminal

Representative nongame species that may occur within the Alternate Southern Terminal siting area would be the same as for the Proposed Alternative Southern Terminal siting area.

Southern Terminal located near IPP (Design Option 2)

Small Mammals

Representative nongame small mammal species that may be found within the Southern Terminal located near IPP (Design Option 2) include little brown myotis, white-tailed antelope squirrel, northern pocket gopher, Ord's kangaroo rat, and plains pocket mouse (Fitzgerald et al. 2011).

Raptors

No raptor nests are known to occur within 1 mile of the Southern Terminal located near IPP (Design Option 2) siting area.

Other Migratory Birds

Representative migratory bird species that may be found at the Southern Terminal located near IPP (Design Option 3) siting area include western kingbird, dark-eyed junco, white-crowned sparrow, black-billed magpie, and cliff swallow.

Reptiles

Representative reptile species that may be found within the Region II wildlife analysis area include sagebrush lizard, short-horned lizard, rubber boa, bull snake, wandering garter snake, and western rattlesnake (Hammerson 1999; UDWR 2005).

Southern Substation located near IPP (Design Option 3)

The Southern Substation located near IPP (Design Option 3) is entirely within the boundaries of the Southern Terminal (Design Option 2) and representative nongame species would be the same.

USFS Management Indicator Species

Terminal siting areas are not within National Forests; therefore, no MIS are addressed for those locations.

Audubon IBAs and USFWS BHCAs

Terminal siting areas are not within Audubon IBAs or USFWS BHCAs.

Region I

Small Mammals

The primary habitat type in Region I consists of sagebrush shrubland. Representative nongame small mammal species that may be found within the Region I wildlife analysis area include little brown myotis, Merriam's shrew, golden-mantled ground squirrel, least chipmunk, northern pocket gopher, Ord's kangaroo rat, white-tailed prairie dog, Wyoming ground squirrel, Wyoming pocket gopher, and olive-backed pocket mouse (Fitzgerald et al. 2011).

Raptors

The Region I wildlife analysis area encompasses a wide variety of habitats (e.g., sagebrush shrubland, saltbush shrubland, grassland, etc.) for breeding and foraging raptor species (Johnsgard 1990; Kingery 1998). Based on agency raptor nest data, six species of raptors that are not classified as special status have been documented nesting within the Region I wildlife analysis area. These include northern harrier, Cooper's hawk, red-tailed hawk, American kestrel, great horned owl, and common raven (**Table 3.7-11**). Common ravens are not considered raptors, but ravens may utilize historic raptor nests and, conversely, raptors may add to, and utilize historic raven nests. Special status raptor species that occur in Region I are addressed in Section 3.8.4.3, Region I.

Table 3.7-11 Non-Special Status Raptor Species Known to Nest in Region I

Species	Habitat Association[1]
Northern harrier	1, 10, 11, 12, 13, 17, 21
Cooper's hawk	1, 2, 5, 6, 17, 21
Red-tailed hawk	1, 3, 4, 7, 10, 11, 12, 13, 14, 16, 17, 18, 19, 21

Table 3.7-11 Non-Special Status Raptor Species Known to Nest in Region I

Species	Habitat Association[1]
American kestrel	1, 7, 10, 11, 12, 13, 14, 16, 17, 18, 19, 21
Great horned Owl	1, 2, 5, 6, 7, 10, 11, 12, 13, 14, 16, 17, 18, 19, 21
Common raven	1, 2, 3, 4, 5, 6, 7, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21

[1] Habitat Association refers to vegetation communities (by number) as presented in **Table 3.7-2**.

Other Migratory Birds

In addition to the common migratory bird species presented in Section 3.7.4, Baseline Description, a wide variety of migratory bird species may occur in the various habitat types found in Region I. Details regarding BCC regions, BHCAs and associated species, PIF species, and Audubon IBAs are discussed below.

USFWS Birds of Conservation Concern and Partners in Flight Priority Bird Species

The Region I wildlife analysis area is located within USFWS Bird Conservation Regions 10 (Northern Rockies) and 16 (Southern Rockies/Colorado Plateau). **Table 3.7-12** presents the five BHCAs that are crossed by the 2-mile transmission line corridor in Region I and several representative bird species for each (Colorado PIF 2000, Nicholoff 2003; USFWS 2008; Wyoming Steering Committee IWJV 2005). Within Region I there are 16 BHCAs located within the wildlife analysis area, comprising a total of 5,507,769 acres.

Table 3.7-12 Bird Habitat Conservation Areas and Representative Priority Bird Species within the Region I Wildlife Analysis Area

State	BCR	BHCA Number and Name	Habitat Types	Representative Priority Birds[1,2]
WY	10	38 – Powder Rim	• Sagebrush shrubland • Utah juniper	• Ash-throated flycatcher[3] • Plumbeous vireo[3]
WY	10	39 – Little Snake River	• Herbaceous wetland • Open water	• Cinnamon teal • Northern harrier[3] • Marsh wren[2]
CO	10/16	21 – Yampa River in Routt County	• Herbaceous wetland • Open water • Woody riparian and wetlands	• Bufflehead • Marsh wren[3] • Willow flycatcher • Veery[3] • Wilson's warbler
CO	10	28 - Yampa River in Moffat County	• Herbaceous wetland • Open water • Woody riparian and wetlands	• Northern harrier[3] • Cinnamon teal • Marsh wren[3]
CO	10	32 - Routt and Moffat County Uplands	• Sagebrush shrubland • Montane shrubland	• Greater sage-grouse[3] • Columbian sharp-tailed grouse[3] • Sage sparrow[3] • Brewer's sparrow[3]

1This is not an all-inclusive list of BCC and PIF species.

[2]Many of these species also are special status species and are presented in further detail in Section 3.8, Special Status Wildlife Species.

[3]Partners in Flight Priority Bird Species (may differ between states depending on abundance and threats to the species).

Audubon Important Bird Areas

A total of eight Audubon Important Bird Areas are within the Region I wildlife analysis area.

Red Desert IBA – The Red Desert IBA is located 22.6 miles from the from the 2-mile transmission line corridor. The site consists of a 1,910,651 acre complex of IBA sites in Sweetwater County, Wyoming. The Red Desert IBA is also a Conservation Action Site for Audubon Wyoming's Sagebrush Initiative. The IBA encompasses a variety of habitats, including sagebrush/grasslands; shrub-steppe; springs and seeps; stands of limber pine and aspen with a deciduous shrub understory; seasonal wetlands; and seasonal ponds in spring. The site provides important habitat for sagebrush obligate species, such as greater sage-grouse, sage thrasher, sage sparrow, and Brewer's sparrow. Numerous other bird species inhabit the micro-habitats in the Red Desert IBA (National Audubon Society 2011).

Muddy Creek Wetlands IBA – The Muddy Creek Wetlands IBA is intersected by the 2-mile transmission line corridor in Carbon County, Wyoming. The IBA consists of a 7,205 acre site that encompasses 6 miles of riparian vegetation along Muddy Creek. Habitat at the site includes a willow-dominated riparian corridor with associated flood plain, meadows, and adjacent upland areas. Hundreds of species of waterbirds, shorebirds, and waterfowl from both the Pacific and Central flyways utilize the area for breeding and migration. The diversity of habitats provides an oasis for a large variety of bird species, such as white-faced ibis, snowy egrets, herons, grebes, warblers, and willow flycatchers. The wetlands support up to 50,000 ducks during migration and a host of breeding shorebirds, including American avocets and black-necked stilts (National Audubon Society 2011).

Brown's Park National Wildlife Refuge IBA – Brown's Park National Wildlife Refuge is located 2 miles from the 2-mile transmission line corridor in Moffat County, Colorado. The IBA consists of a 13,211-acre site along the Green River. The vegetation is characterized by riparian, wetland, grassland, semi-desert shrubland, and pinyon-juniper. The IBA provides important habitat for 222 bird species, especially breeding and migrating waterbirds, shorebirds, gulls, terns, and songbirds (National Audubon Society 2011).

Powder Rim IBA – The Powder Rim IBA is located 14 miles from the 2-mile transmission line corridor in Sweetwater County, Wyoming. The IBA consists of a 131,826 acre mosaic of juniper and big sagebrush. Because juniper habitat is limited in Wyoming, the bird community at Powder Rim IBA is unique and has significant conservation value. The juniper woodlands have been shown to support greater bird species diversity than the surrounding shrubland habitat. Powder Rim IBA is especially noted for juniper obligate species (National Audubon Society 2011).

Carpenter Ranch/Yampa River Preserve IBA - The Carpenter Ranch/Yampa River Preserve IBA is located 9.9 miles from the 2-mile transmission line corridor in Routt County, Colorado. The IBA consists of 1730 acres of riparian forest dominated by narrowleaf cottonwood, box elder, and red-osier dogwood. This type of riparian forest community is considered rare because it only occurs in a few locations in Colorado, Utah, and Wyoming. The Yampa River Preserve is located just upstream from the Carpenter Ranch and encompasses 824 acres of the same rare riparian forest community as the Carpenter Ranch (National Audubon Society 2011).

Pelican Lake IBA – Pelican Lake IBA is located 2 miles from the 2-mile transmission line corridor in Uintah County, Utah, and falls within both the Region I and Region II wildlife analysis areas. The IBA consists of a 1,056 acre complex of wetland areas, including a natural lake, which provides important winter habitat for large numbers of waterfowl, especially mallards. Bald eagles winter at this site. American white pelicans forage at Pelican Lake during much of the year (National Audubon Society 2011).

Ouray National Wildlife Refuge IBA – The Ouray National Wildlife Refuge IBA lies in the Uintah Basin located in Uintah County, Utah, and falls within both the Region I and Region II wildlife analysis areas. The

IBA is located 4.6 miles from the 2-mile transmission line corridor. The site consists of 20,890 acres and is considered to contain the most significant single stand of riparian cottonwood on the entire Green River and perhaps the entire Colorado River Drainage. Of the five priority habitats identified by the Utah Avian Conservation Strategy, the Ouray National Wildlife Refuge IBA contains three. The lowland riparian habitat supports broad-tailed hummingbird, yellow-billed cuckoo, and black-throated gray warbler. The wetland habitat supports nesting populations of American avocet, black-necked stilt, and American white pelican. The shrub/steppe habitat supports ferruginous hawks, greater sage-grouse, Brewer's sparrow, and sage sparrow (National Audubon Society 2011).

Shamrock Hills Raptor Concentration Area IBA – The Shamrock Hills Raptor Concentration Area IBA is located 2.7 miles from the 2-mile transmission line corridor in Carbon County, Wyoming. The IBA consists of 36,787 acres encompassing a variety of habitat types. Sagebrush and grasslands are the dominant vegetation communities. The area is known as one of the largest breeding grounds for ferruginous hawks in the western U.S. Other migratory birds known to utilize this IBA include golden eagle, burrowing owl, northern harrier, prairie falcon, American kestrel, great horned owl, and red-tailed hawk. Mountain plover are present in low numbers. Passerine species include lark bunting, sage sparrow, sage thrasher, Say's phoebe, and mountain bluebird (National Audubon Society 2011).

Reptiles

The primary habitat type in Region I consists of sagebrush shrubland. Representative reptile species that may be found within the Region I wildlife analysis area include sagebrush lizard, short-horned lizard, Great Basin gopher snake, bull snake, wandering garter snake, and prairie rattlesnake (Baxter and Stone 1980; Hammerson 1999).

USFS Management Indicator Species

No National Forests are crossed by the Project in Region I; therefore, no MIS are addressed in this section.

Region II

Small Mammals

The primary habitat types in Region II consist of sagebrush shrubland, saltbush shrubland, and pinyon-juniper. Representative nongame small mammal species that may be found within the wildlife analysis area in Region II include little brown myotis, masked shrew, white-tailed antelope squirrel, Uintah chipmunk, northern pocket gopher, Ord's kangaroo rat, and plains pocket mouse (Fitzgerald et al. 2011).

Raptors

The Region II wildlife analysis area encompasses a wide variety of habitats (e.g., agriculture, sagebrush shrubland, saltbush shrubland, pinyon-juniper, etc.) for breeding and foraging raptor species. Based on agency raptor nest data, six species of raptors that are not classified as special status have been documented nesting within the Region II wildlife analysis area. These include osprey, Cooper's hawk, red-tailed hawk, American kestrel, great horned owl, and common raven (**Table 3.7-13**). Common ravens are not considered raptors, but ravens may utilize historic raptor nests and, conversely, raptors may add to, and utilize historic raven nests. Special status raptor species that occur in Region II are addressed in Section 3.8.4.4, Region II.

Table 3.7-13 Non-special Status Raptor Species Known to Nest in Region II

Species	Habitat Association[1]
Cooper's hawk	1, 2, 5, 6, 16, 17, 21
Red-tailed hawk	1, 3, 4, 7, 10, 11, 12, 13, 14, 16, 17, 18, 19, 21

Table 3.7-13 Non-special Status Raptor Species Known to Nest in Region II

Species	Habitat Association[1]
Osprey	15, 17, 21
American kestrel	1, 7, 10, 11, 12, 13, 14, 16, 17, 18, 19, 21
Great horned owl	1, 2, 5, 6, 7, 10, 11, 12, 13, 14, 16, 17, 18, 19, 21
Common raven	1, 2, 3, 4, 5, 6, 7, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21

[1] Habitat Association refers to vegetation communities (by number) as presented in **Table 3.7-2**.

Other Migratory Birds

USFWS Birds of Conservation Concern and Partners in Flight Priority Bird Species

The Region II wildlife analysis area falls within USFWS Bird Conservation Regions 16 (Southern Rockies/Colorado Plateau and 9 (Great Basin). **Table 3.7-14** presents the 14 BHCAs found in the Region II wildlife analysis area and several representative bird species that have been observed utilizing these BHCAs (Colorado PIF 2000; Parrish et al. 2002; USFWS 2008; Utah Steering Committee IWJV 2005). There are 28 BHCAs located within the Region II wildlife analysis area, comprising a total of 4,823,358 acres.

Table 3.7-14 Bird Habitat Conservation Areas and Representative Priority Bird Species within the Region II Wildlife Analysis Area

State	BCR	BHCA Number and Name	Habitat Types	Representative Priority Birds[1,2]
CO	16	17 – Colorado National Monument, Rabbit Valley, Uplands	• Sagebrush shrubland • Montane shrubland • Woody riparian and wetlands	• Lewis's woodpecker[3] • Brewer's sparrow[3] • Common poorwill[3] • Virginia's warbler[3]
CO	16	30 - White River	• Open water • Woody riparian and wetlands	• Barrow's goldeneye[3] • Veery[3] • Northern harrier[3] • Lewis's woodpecker[3]
CO	16	31 - Roan Plateau, Piceance Creek, Cathedral Bluffs	• Saltbush shrubland • Woody riparian and wetlands	• Gray vireo[3] • Long-eared owl • Black-throated gray warbler[3] • Piñon jay
UT	9	16 – Utah Lake, Mona Lake, Tintic Valley	• Open water • Herbaceous wetland • Woody riparian and wetlands • Sagebrush shrubland • Saltbush shrubland	• Greater sage-grouse[3] • Brewer's sparrow[3] • Cinnamon teal • Long-billed curlew[3] • American avocet[3] • Black-necked stilt[3] • American white pelican[3]
UT	16	36 – Summerhouse Spring	• Wetland and associated uplands	• Greater sage-grouse[3] • Common snipe
UT	16	27 - Emma Park	• Wet meadow	• Greater sage-grouse[3] • Common snipe • Long-billed curlew[3] • Shorebirds

Table 3.7-14 Bird Habitat Conservation Areas and Representative Priority Bird Species within the Region II Wildlife Analysis Area

State	BCR	BHCA Number and Name	Habitat Types	Representative Priority Birds[1,2]
UT	16	20 – Strawberry Reservoir Watershed	• Open water • Woody riparian and wetlands • Montane shrubland	• Greater sage-grouse[3] • Brewer's sparrow3 • Sage sparrow[3] • Cinnamon teal
UT	16	21 - Duchesne River	• Open water • Herbaceous wetland • Woody riparian and wetlands • Saltbush shrubland	• Yellow-billed cuckoo (western)[3] • Bobolink[3] • American white pelican[3]
UT	16	25 - Upper Green River – Including: • Ouray National Wildlife Refuge • Pelican Lake • Stewart Lake Waterfowl Management Area • Pariette Wetlands	• Herbaceous wetland • Open water • Woody riparian and wetlands	• Yellow-billed cuckoo[3] • American white pelican[3] • Lewis's woodpecker[3] • Mountain plover[3]
UT	16	29 – Lower Nebo Creek Drainage	• Woody riparian and wetlands • Herbaceous wetland	• Lewis's woodpecker[3] • Cooper's hawk
UT	9	30 – Sevier Bridge, Chicken Creek Reservoirs	• Open water • Herbaceous wetland	• Cinnamon teal • Peregrine falcon • Long-billed curlew[3] • American avocet[3] • Black-necked stilt[3]
UT	9	31 - Delta	• Open water • Herbaceous wetland	• Cinnamon teal • Long-billed curlew[3] • American avocet[3] • Black-necked stilt[3]
UT	16	37 – Green River	• Woody riparian and wetlands • Herbaceous wetland • Open water	• Bald eagle • Virginia warbler[3] • Lucy's warbler[3] • Yellow-breasted chat • Blue grosbeak • Yellow-billed cuckoo (western)[3] • Mexican spotted owl[3]
UT	16	41 – Cisco Desert	• Desert shrub	• Bald eagle • Golden eagle • Ferruginous hawk[3] • Burrowing owl[3] • Long-billed curlew[2]

[1] Not an all inclusive list of BCC and PIF species.

[2] Many of these species also are special status species and are presented in further detail in Section 3.8, Special Status Wildlife Species.

[3] Partners in Flight Priority Bird Species (may differ between states depending on abundance and threats to the species).

Audubon Important Bird Areas

A total of five Audubon Important Bird Areas are within the Region II wildlife analysis area.

Ouray National Wildlife Refuge IBA – The Ouray National Wildlife Refuge IBA lies in the Uintah Basin located in Uintah County, Utah, and falls within the Region I and Region II wildlife analysis areas. The IBA is located 4.6 miles from the 2-mile transmission line corridor. The site consists of 20,890 acres and is considered to contain the most significant single stand of riparian cottonwood on the entire Green River and perhaps the entire Colorado River Drainage. Of the five priority habitats identified by the Utah Avian Conservation Strategy, the Ouray National Wildlife Refuge IBA contains three. The lowland riparian habitat supports broad-tailed hummingbird, yellow-billed cuckoo, and black-throated gray warbler. The wetland habitat supports nesting populations of American avocet, black-necked stilt, and American white pelican. The shrubsteppe habitat supports ferruginous hawks, greater sage-grouse, Brewer's sparrow, and sage sparrow (National Audubon Society 2011).

Pelican Lake IBA – Pelican Lake IBA is located 2 miles from the 2-mile transmission line corridor in Uintah County, Utah, and falls within the Region I and Region II wildlife analysis areas. The IBA consists of a 1,056 acre complex of wetland areas, including a natural lake, which provides important winter habitat for large numbers of waterfowl, especially mallards. Bald eagles winter at this site. American white pelicans forage at Pelican Lake during much of the year (National Audubon Society 2011).

Rabbit Valley Recreation Management Area and IBA – Rabbit Valley Recreation Management Area IBA is located 3 miles from the 2-mile transmission line corridor in Mesa County, Colorado. The IBA consists of a 366 acre Recreation Management Area. The vegetation is characterized by pinyon-juniper -juniper and sagebrush in high desert terrain. A small portion of the site consists of lowland riparian habitat. Rabbit Valley Recreation Management Area IBA is especially noted as providing habitat for gray vireos and Scott's orioles (National Audubon Society 2011).

Upper Strawberry Watershed IBA – The Upper Strawberry Watershed IBA is located 11 miles from the 2-mile transmission line corridor in Wasatch County, Utah. The IBA consists of a 126,073 acre site with a wide variety of forested and non-forested habitats. The Upper Strawberry Reservoir Watershed IBA provides habitat for a wide variety of species. Over 120 bird species have been recorded at the site, including an estimated 500 greater sage-grouse, over 200 American white pelicans, and at least 10 pairs of nesting American three-toed woodpeckers. A nesting pair of bald eagles is also known to occur in the Strawberry Valley. Numerous neotropical migrants are known to nest or regularly occur in the Upper Strawberry Watershed IBA. These include Brewer's sparrow and broad-tailed hummingbird. Strawberry Reservoir provides significant habitat for Caspian terns (as high as 60). An estimated 1,200 western grebes and 100 Clark's grebes have been counted on Strawberry Reservoir. These numbers approximate 1 percent of the total North American population for these species (National Audubon Society 2011).

Grand Valley Riparian Corridor and Highline State Park IBA – The Grand Valley Riparian Corridor and Highline State Park IBA is located 7 miles from the 2-mile transmission line corridor in Mesa County, Colorado. This IBA consists of a 175,634 acre assemblage of areas along the Colorado River floodplain in the Grand Valley. The site contains much of Colorado's best remaining Rio Grande cottonwood habitat. The IBA provides nesting, wintering, and stopover habitat for approximately 75 percent of the state's bird species. Nearly 300 bird species have been recorded at this IBA, including nearly 70 breeding species and over 70 wintering species (National Audubon Society 2011).

USFS Management Indicator Species

Four National Forests would be crossed by the Project in Region II. Management Indicator Species for each of these forests are presented in **Table 3.7-4**.

Reptiles

The primary habitat types in Region II consist of sagebrush shrubland, saltbush shrubland, and pinyon-juniper woodland. Representative reptile species that may be found within the Region II wildlife analysis area include sagebrush lizard, short-horned lizard, rubber boa, bull snake, wandering garter snake, and western rattlesnake (Hammerson 1999; UDWR 2005).

Region III

Small Mammals

The Region III wildlife analysis area encompasses a wide variety of habitats for small mammals (e.g., sagebrush shrubland, grassland, desert shrubland); however, the primary habitat type is desert shrubland. Representative nongame small mammal species that may be found within the Region III wildlife analysis area include little brown myotis, Merriam's shrew, white-tailed antelope squirrel, cliff chipmunk, Botta's pocket gopher, Ord's kangaroo rat, and Great Basin pocket mouse (Hall 1995).

Raptors

The Region III wildlife analysis area encompasses a wide variety of habitats for breeding and foraging raptor species (e.g., sagebrush shrubland, grassland, desert shrubland); however, the primary habitat type is desert shrubland. Agency raptor nest data is limited within Region III but suspected nesting raptors that are not classified as special status include red-tailed hawk, osprey, and common raven (**Table 3.7-15**). Common ravens are not raptors, but ravens may utilize historic raptor nests and, conversely, raptors may add to, and utilize historic raven nests. Special status raptor species that occur in Region III are addressed in Section 3.5.4.5, Region III.

Table 3.7-15 Non-Special Status Raptor Species Known to Nest in Region III

Species	Habitat Association[1]
Red-tailed hawk	1, 3, 4, 7, 10, 11, 12, 13, 14, 16, 17, 18, 19, 21
Osprey	15, 17, 21
Common raven	1, 2, 3, 4, 5, 6, 7, 10, 11, 12, 13, 14, 16, 17, 18, 19, 20, 21

[1] Habitat Association refers to vegetation communities (by number) as presented in **Table 3.7-2**.

Other Migratory Birds

Birds of Conservation Concern and Partners in Flight Priority Bird Species

The Region III wildlife analysis area falls within USFWS Bird Conservation Regions 9 (Great Basin), 16 (Southern Rockies/Colorado Plateau), and 33 (Sonoran and Mojave Deserts). **Table 3.7-16** presents the seven BHCAs in Region III that are crossed by the 2-mile transmission line corridor, and several representative bird species for each (Neel 1999; Parrish et al. 2002; USFWS 2008; Utah Steering Committee IWJV 2005). There are nine BHCAs located within the Region III wildlife analysis area, comprising a total of 3,422,193 acres.

Table 3.7-16 Bird Habitat Conservation Areas and Representative Priority Bird Species within the Region III Wildlife Analysis Area

State	BCR	BHCA Number and Name	Habitat Types	Representative Priority Birds[1,2]
UT	9	31 - Delta	• Open water • Herbaceous wetland	• Cinnamon teal • Long-billed curlew[3] • American avocet[3] • Black-necked stilt[3]
UT	9	45 – Bald Hills	• Shrub-steppe	• Greater sage-grouse[3] • Ferruginous hawk[3] • Sage sparrow[3] • Brewer's sparrow[3]

Table 3.7-16 Bird Habitat Conservation Areas and Representative Priority Bird Species within the Region III Wildlife Analysis Area

State	BCR	BHCA Number and Name	Habitat Types	Representative Priority Birds[1,2]
UT	9, 16	48 – Virgin River	• Open water • Woody riparian and wetlands	• Abert's towhee[3] • Lucy's warbler[3] • Bell's vireo[3] • Gray vireo[3] • Yellow-billed cuckoo (western)[3]
UT	33	47 – Beaver Dam and Wash	• Open water • Woody riparian and wetlands	• Black-tailed gnatcatcher[3] • Yellow-billed cuckoo (western)[3] • Lucy's warbler[3] • Bell's vireo[3]
NV	9	5- Lower Muddy River Complex/ Meadow Valley Wash	• Multi-aged tree stands with riparian shrub understory • Floodplain wetlands	• Yuma clapper rail • Southwestern willow flycatcher
NV	9	6- Pahranaghat/ Dry Lake Valley	• Cottonwood-willow riparian • Upland habitat	• Southwestern willow flycatcher • Yellow-billed cuckoo • Greater sandhill crane • Bald eagle • Golden eagle
NV	9	27- Lincoln Sage Grouse PMU	• Sagebrush	• Greater sage-grouse

[1] Not an all inclusive list of BCC and PIF species.

[2] Many of these species also are special status species and are presented in further detail in Section 3.8, Special Status Wildlife Species.

[3] Partners in Flight Priority Bird Species (may differ between states depending on abundance and threats to the species).

Audubon Important Bird Areas

Nine Audubon Important Bird Areas are within the Region III wildlife analysis area.

Lytle Preserve IBA – The Lytle Preserve IBA located 1 mile from the 2-mile transmission line corridor in Washington County, Utah. The IBA consists of 525 acres of cottonwood riparian habitat within the Utah portion of the Mojave Desert. Over 200 bird species have been recorded on the preserve. Of particular note are Gambel's quail, Lucy's warbler, and Bell's vireo. The preserve also is a corridor for migrants, including flycatchers, warblers, and flammulated owls. Nesting species include Cooper's hawk, Costa's hummingbird, black-tailed gnatcatcher, white-winged dove, summer tanager, blue grosbeak, common black hawk, brown-crested flycatcher, vermillion flycatcher, and phainopepla (National Audubon Society 2011).

Moapa Valley IBA – The Moapa Valley IBA is located 6 miles from the 2-mile transmission line corridor in Clark County, Nevada. The IBA consists of 2,404 acres of riparian habitat along the upper Virgin River. The site is located within a region of dry Mojave Desert scrub and mesquite, and provides significant riparian stopover habitat for migratory birds, including western yellow-billed cuckoo, sandhill crane, loggerhead shrike, Lucy's warbler, Crissal thrasher, and vermillion flycatcher (National Audubon Society 2011).

Virgin River IBA - The Virgin River IBA is located 8 miles from the 2-mile transmission line corridor in Clark County, Nevada. The IBA consists of 15,454 acres encompassing considerable meanders of the Virgin River. The site is characterized by a variety of native riparian vegetation, including marshes and patches of

native willow. Depending on the water level of Lake Mead, a delta forms where the river flows into the lake. The Virgin River is the only intact river in the Mojave Desert of Nevada that still has meanders and is not influenced by dams. All of Nevada's endangered birds and many of the birds identified in the Lowland Riparian section of the Nevada Bird Conservation Plan occur at the Virgin River (National Audubon Society 2011).

Fish Springs National Wildlife Refuge IBA – The Fish Springs National Wildlife Refuge IBA is located 33 miles from the 2-mile transmission line corridor in Juab County, Utah. The IBA consists of 18,123 acres encompassing salt grass uplands, desert shrub, mudflats, and spring-fed saline marsh impoundments. The refuge provides 10,000 acres of critical wetlands habitat in a very arid desert region. Fish Springs National Wildlife Refuge IBA is the only significant wetland in over 50 miles. The refuge serves as a vital stopover point for migrating birds, with 275 bird species documented at the refuge. Unusual or rare birds utilizing the IBA include: blue grosbeak, varied thrush, summer tanager, phainopepla, Lucy's warbler, magnolia warbler, blackpoll warbler, black-and-white warbler, and American redstart (National Audubon Society 2011).

Lower Muddy River IBA – The Lower Muddy River IBA is located 4 miles from the 2-mile transmission line corridor in Clark County, Nevada. The IBA consists of 2,646 acres, including the river and its flood plain from the Overton Wildlife Management Area to Lake Mead. The cottonwood riparian vegetation along this Colorado River tributary provides important habitat for a variety of bird species, including Yuma clapper rail, Virginia rail, southwestern willow flycatcher, western yellow-billed cuckoo, summer tanager, brown-crested flycatcher, black-tailed gnatcatcher, Crissal thrasher, verdin, and a variety of raptors and waterbirds (NDOW 2012).

Meadow Valley Wash IBA – The Meadow Valley Wash IBA is located 3 miles from the 2-mile transmission line corridor in Lincoln County, Nevada. The IBA consists of 15,056 acres of intermittent wetlands and seeps. The combination of a large area, north-south alignment, and wetland/water sites make this wash system a significant wildlife habitat and migration corridor for riparian and desert bird species. The IBA provides habitat for year-round residents, seasonal breeding birds, and migrants (National Audubon Society 2011).

Pahranagat Valley Complex IBA – The Pahranagat Valley Complex IBA is intersected by the 2-mile transmission line corridor in Lincoln County, Nevada. The IBA consists of 5,914 acres from the Pahranagat Valley National Wildlife Refuge and the Key-Pittman Wildlife Management Area. More than 230 different bird species utilize the Pahranagat National Wildlife Refuge. Bird abundance and diversity is highest during migration when large numbers of songbirds, waterfowl, shorebirds, and raptors converge. Willow thickets on the west side of Nesbitt Lake provide nesting sites for southwestern willow flycatchers and western yellow-billed cuckoos. Sandhill cranes utilize the IBA during migration (National Audubon Society 2011)

Sheep Range IBA – The Sheep Range IBA is located 6 miles from the 2-mile transmission line corridor in Clark County, Nevada. The IBA consists of 59,917 acres in the arid mountains of southern Nevada. This area encompasses three different life zones and provides habitat diversity for many bird species. Small seeps and springs provide much needed water for birds. The site is noteworthy for flammulated owl, gray flycatcher, black-throated gray warbler, and Grace's warbler (National Audubon Society 2011).

Lake Mead National Recreation Area IBA – The Lake Mead National Recreation Area IBA is intersected by the 2-mile transmission line corridor in Clark County, Nevada and falls within the Regions III and IV wildlife analysis areas. The 152,860 acre IBA is part of the Lake Mead National Recreation Area. The area of the NRA recognized as an IBA is limited to Lake Mead and Lake Mohave above Davis Dam on the Colorado River, the adjacent vegetated shoreline, and the immediately adjacent cliff faces. A variety of habitat types can be found at the Lake Mead National Recreation Area IBA. The majority of vegetation is Mojave desert scrub, characterized by creosote and bursage. Desert washes support more lush vegetation, including mesquite bosques and acacia thickets. Cliff habitat is present at Lake Mead and in

the Black Canyon below Hoover Dam. Forty springs and over 950 miles of shoreline in the National Recreation Area provide riparian habitat that supports diverse plant and wildlife species. Nearly 370 species of birds have been recorded in the National Recreation Area. This area encompasses migration stopover habitat for waterbirds. The adjacent cliff habitat provides important nesting sites for raptors, particularly peregrine falcons. Other species of note include bald eagle, southwestern willow flycatcher, Lucy's warbler, Bell's vireo, and yellow-breasted chat (National Audubon Society 2011).

USFS Management Indicator Species

The Dixie National Forest would be crossed by the Project in Region III. Management Indicator Species for this forest are presented in **Table 3.7-4**.

Reptiles

The primary habitat type in Region III consists of desert shrubland. Representative reptile species that may be found within the Region III wildlife analysis area include coachwhip, common kingsnake, and glossy snake (UDWR 2005). Desert tortoises also occur in Region III and are addressed in Section 3.8, Special Status Species.

Region IV

Small Mammals

The primary habitat type in Region IV consists of desert shrubland. Representative nongame small mammal species that may be found within the Region IV wildlife analysis area include little brown myotis, desert shrew, white-tailed antelope squirrel, Botta's pocket gopher, brush mouse, and canyon mouse (Hall 1995).

Raptors

The Region IV wildlife analysis area encompasses mostly desert shrubland, which is habitat for breeding and foraging raptor species. Agency raptor nest data is limited within Region IV but suspected nesting raptors that are not classified as special status include red-tailed hawk and great horned owl (**Table 3.7-17**). Special status raptor species that occur in Region IV are addressed in Section 3.8.4.6, Region IV.

Table 3.7-17 Non-Special Status Raptor Species Suspected to Nest in Region IV

Species	Habitat Association[1]
Red-tailed hawk	1, 3, 4, 7, 10, 11, 12, 13, 14, 16, 17, 18, 19, 21
Great horned Owl	1, 2, 5, 6, 7, 10, 11, 12, 13, 14, 16, 17, 18, 19, 21

[1] Habitat Association refers to vegetation communities (by number) as presented in **Table 3.7-2**.

Other Migratory Birds

Birds of Conservation Concern and Partners in Flight Priority Bird Species

The Region IV wildlife analysis area falls within USFWS Bird Conservation Region 33 (Sonoran and Mojave Deserts). **Table 3.7-18** presents the two BHCAs that are crossed by the 2-mile transmission line corridor in Region IV and several representative bird species for each (Neel 1999; Nevada Steering Committee IWJV 2005; USFWS 2008). There are two BHCAs located within the Region IV wildlife analysis area comprising a total of 1,036,647 acres.

Table 3.7-18 Birds of Conservation Concern and Partners in Flight Priority Bird Species for Region IV

State	BCR	BHCA Number and Name	Habitat Types	Representative Priority Birds[1,2]
NV	33	5 – Lower Muddy River Complex/Meadow Valley Wash	• Open water • Herbaceous wetland	• Cinnamon teal • Southwestern willow flycatcher[3] • Lucy's warbler[3] • Black-crowned night heron
NV	33	7 – Piute/Eldorado/Fenner DWMA	• Desert shrub	• LeConte's thrasher[3] • Burrowing owl[3] • Ash-throated flycatcher[3] • Phainopepla[3] • Loggerhead shrike[3]

[1] Not an all inclusive list of BCC and PIF species.

[2] Many of these species also are special status species and are presented in further detail in Section 3.8, Special Status Wildlife Species.

[3] Partners in Flight Priority Bird Species (may differ between states depending on abundance and threats to the species).

Audubon Important Bird Areas

Two Audubon Important Bird Areas are within the Region IV wildlife analysis area.

Lake Mead National Recreation Area IBA – The Lake Mead National Recreation Area IBA is intersected by the 2-mile transmission line corridor in Clark County, Nevada and falls within the Regions III and IV wildlife analysis areas. The 152,860 acre IBA is part of the Lake Mead National Recreation Area. The area of the NRA recognized as an IBA is limited to Lake Mead and Lake Mohave above Davis Dam on the Colorado River, the adjacent vegetated shoreline, and the immediately adjacent cliff faces. A variety of habitat types can be found at the Lake Mead National Recreation Area IBA. The majority of vegetation is Mojave desert scrub, characterized by creosote and bursage. Desert washes support more lush vegetation, including mesquite bosques and acacia thickets. Cliff habitat is present at Lake Mead and in the Black Canyon below Hoover Dam. Forty springs and over 950 miles of shoreline in the National Recreation Area provide riparian habitat that supports diverse plant and wildlife. Nearly 370 species of birds have been recorded in the National Recreation Area. This area encompasses migration stopover habitat for waterbirds. The adjacent cliff habitat provides important nesting sites for raptors, particularly peregrine falcons. Other species of note include bald eagle, southwestern willow flycatcher, Lucy's warbler, Bell's vireo, and yellow-breasted chat (National Audubon Society 2011).

Wee Thump Joshua Tree Forest IBA – The Wee Thump Joshua Tree Forest IBA is located 15 miles from the 2-mile transmission line corridor in Clark County, Nevada. The IBA consists of 30,808 acres containing dense stands of the Joshua Tree forest. Nest cavities are one habitat component that is almost exclusively absent from desert sites, and it is this resource that makes Wee Thump Joshua Tree Forest IBA unique. The ancient Joshua trees, many estimated to be over 250 years old, do contain cavities, which provide important nesting sites and winter refuges for cavity-dependent bird species. These species include gilded flicker, northern flicker, ash-throated flycatcher, and hairy woodpecker (National Audubon Society 2011).

USFS Management Indicator Species

No national forests are crossed by the Project in Region IV; therefore, no MIS are addressed in the impact analysis.

Reptiles

The primary habitat type in Region IV consists of desert shrubland. Representative reptile species that may be found within the Region IV wildlife analysis area include western fence lizard, common side-blotched lizard, and western rattlesnake (SDNHM 2011).

3.7.6 Impacts to Wildlife

Potential direct impacts to wildlife habitats from the transmission line would occur within a 250-foot-wide transmission line right-of-way (ROW) for each alternative. Direct impacts to wildlife habitats from potential access roads would occur within a 2-mile transmission line corridor for each alternative. Although the precise locations for the transmission line and associated access roads are not known, it is known that they will be constructed within the respective 2-mile transmission line corridors.

Several small reroutes and micro-siting adjustments to the proposed alternative routes in Regions I, II, and III have been included in this impact analysis and are described in detail in Section 2.5.1. These adjustments are located along Alternatives I-D, II-A, II-B, II-C, II-E, II-F, III-A, IV-A, and IV-C. Alternatives I-B and I-D have been widened slightly to accommodate possible micro-siting adjustments to avoid greater sage-grouse habitat. The slight changes in impact acreages for micro-siting, widening, reroutes, or merged alternative segments have been analyzed and are reported only if they are expected to cause more than incremental differences. These project adjustments have been incorporated to address concerns regarding USFS IRAs, BLM designated utility corridors, and greater sage-grouse potential habitat.

Impact analyses include wildlife habitat either directly disturbed or indirectly affected by construction within the 2-mile transmission line corridors. This could include direct removal or alteration of habitat within the 2-mile transmission line corridors, or loss of habitat value, both inside or outside of the 2-mile transmission line corridors due to human presence or noise. Wildlife habitats are based on the vegetation communities identified in **Tables 3.7-2** and **3.7-3** that support various species of wildlife seasonally or throughout the year.

Wildlife-related issues addressed by this impact assessment were determined through the public scoping process and in consultation with BLM, BOR, CPW, NDOW, UDWR, USFS, USFWS, Western, and WGFD. Wildlife-related issues ranged from direct loss and fragmentation of big game crucial winter habitat and migratory bird habitat to the direct loss of birds, primarily raptor species, as a result of electrocution, collision with transmission lines and guy wires. The primary impact issues and analysis considerations for wildlife are listed in **Table 3.7-19**.

Table 3.7-19 Relevant Analysis Considerations for Wildlife

Resource Topic	Analysis Considerations and Relevant Assumptions
Habitat loss and fragmentation	• Acres of habitat for wildlife species located within the 250-foot-wide transmission line ROW and 2-mile transmission line corridor for access roads are quantified; • Species-specific avoidance measures are discussed; • The degree to which the loss or fragmentation of habitat would affect individuals and whether these effects could impact populations of affected species are qualitatively discussed; • Changes in vegetation communities that influence wildlife habitat are referenced; • The timeline for vegetation communities to recover to baseline levels is estimated; • Habitat disturbance is related to overall habitat availability in the respective analysis areas; • Impacts resulting from habitat loss and fragmentation are evaluated using the best available literature; and • The lost opportunity for bird conservation represented by fragmentation and other Project impacts in BHCAs is quantified as the acreages of construction, operation, and indirect impacts to BHCAs crossed by the alternative routes and associated facilities.

Table 3.7-19 Relevant Analysis Considerations for Wildlife

Resource Topic	Analysis Considerations and Relevant Assumptions
Loss of or injury to a species, displacement of individuals, and loss of breeding success from exposure to increased noise and human activity	• Impacts of bird and bat collisions from transmission lines on overall populations are evaluated in qualitative terms; • A qualitative discussion of how construction and operation activities may displace or impact breeding activity for wildlife species is included; and • The wildlife/vehicle collision potential is described in both quantitative and qualitative terms.
Potential impacts of increased perches/ predation from Project infrastructure	• Impacts of increased predation by raptors and corvids (e.g., ravens, crows) on wildlife species is evaluated in qualitative terms.

Through the implementation of the following Project design features and BMPs (as outlined in **Appendix C**), the direct impacts to wildlife resources due to construction would be minimized:

- WWEC BMPs – ECO-1/ECO-2/ECO-4/ECO-6/ECO-7/ECO-8 (protection of sensitive wildlife and habitats); FIRE-1/FIRE-2 (fire management and fuels strategies); NOISE-2 (noise reduction strategy); REST-1 (topsoil salvage, seeding with weed-free, native seeds, and restoring pre-development contours) and REST-2 (restoring vegetation to values commensurate with the ecological setting);
- Agency BMPs – All applicable State and Federal agency No Surface Occupancy restrictions (NSO), Conditional Surface Occupancy (CSO) restrictions, and Timing Limitations (TL) as outlined in **Appendix C**;
- TWE Design Features – TWE-1/TWE-2 (compliance with agency stipulations, laws and regulations); TWE-4 (environmental training); TWE-13/TWE-14/TWE-16 (vegetation management, restoration, and erosion control); TWE-26/TWE-27/TWE-28 (vegetation and noxious weed management); TWE-29/TWE-30/TWE-31/TWE-32/TWE-33/TWE-34 (ecological and special status species protection).

In addition the following mitigation measure for wildlife should be implemented:

WLF-1*: For the protection of breeding migratory birds,* ***WLF-1*** *requires TWE to avoid migratory bird habitat removal on currently undisturbed lands, to the extent possible, between approximately February 1 and July 31 (depends on state) or, alternately, to conduct breeding migratory bird surveys and implement appropriate mitigation in coordination with the BLM, Bureau of Reclamation, CPW, NDOW, UDWR, USFS, USFWS, Western, and WGFD. In addition, in order to avoid impacts to raptors during the breeding season (January 1 to August 31 for most eagles, hawks, falcons, and owls and April 15 to September 15 for burrowing owls), TWE would be required to conduct a breeding raptor survey and implement appropriate mitigation measures, such as buffer zones around active nests, as needed.*

The impact analyses for wildlife assume that the BLM and USFS will continue to manage wildlife habitats in coordination with CPW, NDOW, UDWR, and WGFD. Further assumptions include project design features committed to by TWE and BMPs that would be implemented as applicable under each alternative (**Appendix C**).

3.7.6.1 Impacts to Wildlife from Terminal Construction and Operation

Northern Terminal Habitat Disturbance and Fragmentation

The existing conditions at the proposed Northern Terminal Siting area relative to wildlife habitat can be characterized as highly disturbed and fragmented. Located immediately between the urbanized areas of Sinclair and Rawlins, Wyoming, the siting area exhibits multiple types of anthropogenic disturbance. The

major source of disturbance is the interstate Highway 80 and State Highway 76 corridor located approximately 2.2 miles to the north. This highly active corridor provides constant disturbance from vehicle traffic and fragments the landscape for several miles in both directions. In addition, the Northern Terminal sitting area is fragmented by several existing pipelines, ROWs, County Road 71 to the west, and a Union Pacific Railroad rail line to the north. Other notable sources of disturbance near the Northern Terminal siting area include the Sinclair petroleum refinery located approximately 3 mile to the northeast and the Wyoming State Penitentiary located approximately 3.4 miles to the west.

Potential impacts to wildlife species at the Northern Terminal can be grouped into two main categories: construction and operation. Construction-related impacts are primarily habitat loss, fragmentation, and wildlife mortalities as a result of vehicle collisions and crushing of nests/burrows. Construction impacts account for all disturbance during construction of the Project (e.g., clearing of vegetation for footing construction, upgrading access roads, etc.). Operation impacts are defined as impacts that remain after reclamation is complete and will last at least as long as the Project is in operation and maintenance activities are conducted. Construction-related impacts are typically short-term, whereas operation impacts are typically long-term. Examples of potential operation impacts include habitat disturbance in areas where facilities will be sited, periodic vegetation management activities, wildlife mortalities that occur as a result of collisions with Project facilities, and habitat degradation resulting from increased noise and human activity at the terminal site. During operation of the Project, a portion of habitat disturbed during construction would not be reclaimed until after the end of the Project's design life (decommissioning).

Habitat impacts can be further categorized as direct and indirect. Direct habitat impact results when habitat is destroyed or converted to a form that is unsuitable for the impacted species, typically an operation impact. The primary potential indirect impact is wildlife avoidance (displacement) of otherwise suitable habitat in and around the Northern Terminal site during construction and operation. The primary operation-related impact associated with the terminal is likely to be wildlife mortality as a consequence of electrocution or collision with electrical components. Other potential impacts include habitat avoidance of otherwise suitable habitat due to the presence of the terminal facility and transmission line, avoidance of otherwise suitable habitat due to increased predation from perching raptors, and the increased noise and human presence that are the result of regular maintenance activities.

Construction Impacts

Construction of the Northern Terminal would result in the disturbance of 489 acres of potential wildlife habitat during construction. Approximately 262 acres of temporary use areas would be reclaimed following construction and 227 acres of habitat would remain disturbed during long-term operation of the facility. These areas of impact represent <0.01 percent of shrubland habitat within the Region I wildlife analysis area. The remaining area of disturbance would be reclaimed at the end of the project life (estimated at 50 years).

Impacts to wildlife from surface disturbance would include the loss and fragmentation of wildlife habitat. Habitat loss or alteration would result in direct losses of smaller, less mobile wildlife species, such as small mammals and reptiles, and the displacement of more mobile species into adjacent habitats.

Big Game Species

Potential direct impacts to big game species (i.e., mule deer and pronghorn) would include the incremental reduction of potential forage and the incremental increase of noxious and invasive weeds and habitat fragmentation from vegetation removal. These impacts would be more pronounced within mule deer and pronghorn crucial winter range. Construction of the Northern Terminal would disturb 376 acres of mule deer crucial/yearlong winter range. This area of impact represents 0.12 percent of the total existing crucial winter range for mule deer within the Region I big game analysis area. These habitats consist primarily of saltbush shrubland and sagebrush shrubland. Impacts to crucial winter range would include the loss of potential cover and forage consisting primarily of woody/shrubby vegetation such as sagebrush, bitterbrush, and winterfat. Loss of available forage (e.g., woody shrubs, such as sagebrush) would result in

a long-term (greater than 25 years) impact to wintering big game species. The application of the BLM Rawlins Field Office RMP's (BLM 2008) seasonal restriction to prevent construction activities on public lands within crucial winter range between November 15 and April 30 would reduce displacement of mule deer during the winter months. However, this protection measure does not limit surface disturbance, and impacts to habitat (i.e., crucial winter range) would still occur. No pronghorn crucial winter range would be disturbed by construction of the Northern Terminal. Impacts to elk and mountain lions at the Northern Terminal are not expected since these species are known to occur at low densities in the vicinity of the Northern Terminal.

Small Game Species

Construction of the Northern Terminal would result in direct impacts to small game species (e.g., greater sage-grouse, mourning dove, desert cottontail, white-tailed jackrabbit, and furbearers) and would include construction- and operation-related disturbance of approximately 489 and 227 acres, respectively. These areas of impact represent <0.01 percent and <0.01 percent of small game habitat, respectively, within the Region I wildlife analysis area. The greater sage-grouse is classified as a federal candidate species, as well as a BLM, USFS, and state sensitive species. Therefore, this species is discussed further in Section 3.8, Special Status Wildlife Species. Impacts from construction of the Northern Terminal also would include animal displacement from disturbed areas and increased habitat fragmentation until reclamation has been completed and vegetation is re-established. In most instances, suitable habitat adjacent to disturbed areas would be available for use by these species. However, displacement would increase competition and could result in local reductions in wildlife populations, if adjacent habitats are at carrying capacity. Potential impacts also could include nest and burrow abandonment or loss of eggs or young. These temporary losses would reduce productivity for that breeding season, given the duration of construction activities in the terminal area. Construction of the Northern Terminal also would result in the indirect disturbance of 36 acres and operation disturbance of 17 acres of waterfowl habitat. These areas represent<0.01 percent and <0.01 percent, respectively of the available waterfowl habitat within the wildlife analysis area.

Several factors would minimize potential impacts to big game and small game species as a result of the construction of the Northern Terminal. The Northern Terminal is located in an area that already has a high level of human presence and noise (e.g., Interstate 80, town of Sinclair). Also, implementation of TWE's design features (TWE-32 and TWE-33) and the Rawlins RMP's crucial winter range timing stipulation would reduce direct impacts to big game and small game species during sensitive periods (e.g., nesting, wintering). Therefore, direct impacts from construction of the proposed project at the Northern Terminal would be limited primarily to habitat loss and fragmentation.

Nongame Species

The types of impacts to nongame species (e.g., small mammals, passerines, raptors, and reptiles) would be similar to those previously discussed for small game species. Construction of the Northern Terminal also would result in the construction disturbance of 489 acres and operation disturbance of 227 acres of potential nongame habitat. These areas of impact represent <0.01 percent and <0.01 percent of potential nongame habitat within the Region I wildlife analysis area.

Raptors and Other Migratory Birds

Raptor Nest Data Assumptions

Raptor species are known to use nests for multiple years. The species using a particular nest may vary annually. For example, owls do not construct their own nests; they use previously constructed nests or burrows. Non-raptor species also use raptor nests and vice versa. Common ravens are not considered raptors, but raptor nest data often include common raven nests for this reason.

When a raptor nest is identified outside of nesting season, or when no birds are present, it is often not possible to determine the species that uses the nest. Such nest occurrence data is still valuable and is included in analyses as unknown. Also, as previously described, the species using a nest can change over time. Nests for which the species is unknown are reported both in Section 3.7, Wildlife and Section 3.8, Special Status Wildlife Species.

Raptor nest data are compiled from seven BLM Field Offices, four National Forest datasets, NDOW, and two private consultants. Every effort was made to compile the most accurate dataset for the project; however, there is potential for duplication. The EIS analysis reports nests within 1 mile of the project reference lines and terminal sites. It is possible for a particular raptor nest to occur within 1 mile of multiple alternative routes, micro-siting options, alternative connectors, alternative variations, electrode sites, and terminal sites. Thus, the nest would be reported as potentially impacted multiple times, once for each of the facilities in its proximity.

Finally, while the most recent raptor nest data has been incorporated into analyses, nests and nest structures (i.e. trees) can be destroyed and new nests are constructed each year. A comprehensive raptor nest survey would be conducted along the agency preferred route prior to construction. This would provide the data needed to inform micro-siting adjustments and timing of construction activities to avoid or minimize impacts to nesting raptors.

Raptor species that are not classified as special status species may either seasonally occupy or remain as yearlong residents in the habitats found at the Northern Terminal. These include northern harrier, Cooper's hawk, red-tailed hawk, American kestrel, great horned owl, and common raven. Common ravens are not considered raptors but ravens may utilize historic raptor nests and, conversely, raptors may add to, and utilize, historic raven nests. Potential direct impacts to raptors and other migratory birds at the Northern Terminal would include the construction and operation disturbance of approximately 489 acres and 227 acres, respectively, of potentially suitable raptor and other migratory bird breeding, roosting, and foraging habitat. These areas represent <0.01 percent and <0.01 percent of potentially suitable raptor and other migratory bird breeding, roosting, and foraging habitat within the Region I wildlife analysis area. Impacts to raptor species can result from the loss or alteration in habitat, reduction in prey base, and increased human disturbance, especially during the breeding season. If construction of the Northern Terminal was to occur during the raptor breeding season in Wyoming (January 1 to July 31 for most eagles, hawks, falcons, and owls and April 15 to September 15 for burrowing owls) [BLM 2008]), direct impacts to breeding raptors could include the possible direct loss of nests or indirect effects (e.g., nest abandonment) from increased noise and human presence in proximity to an active nest site.

While no IBAs or BHCAs occur in the vicinity of the Northern Terminal, the habitat types present at this location support migratory bird use for roosting, foraging, and nesting. Direct impacts to migratory birds would include the construction and operation disturbance of 489 acres and 227 acres, respectively, of potentially suitable migratory bird habitat. These areas represent <0.01 percent and <0.01 percent of potentially suitable migratory habitat within the Region I wildlife analysis area. Impacts to migratory bird species would result from loss or alteration of habitat, reduction in forage base, and increased noise and human activity. If construction of the Northern Terminal was to occur during the migratory bird breeding season in Wyoming (January 1 to July 31 for most eagles, hawks, falcons, and owls and April 15 to September 15 for burrowing owls [BLM 2008]), direct impacts to breeding birds could include the direct loss of nests or indirect effects (e.g., nest abandonment) from increased noise and human presence in proximity to an active nest site. Design measure ***WLF-1*** addresses impacts to raptors and migratory birds.

WLF-1*: For the protection of breeding migratory birds,* ***WLF-1*** *requires TWE to avoid migratory bird habitat removal on currently undisturbed lands, to the extent possible, between approximately February 1 and July 31 (depends on state) or, alternately, to conduct breeding migratory bird surveys and implement appropriate mitigation in coordination with the BLM, Bureau of Reclamation, CPW, NDOW, UDWR, USFS, USFWS, Western, and WGFD. In addition, in order to avoid impacts to raptors during the breeding season (January 1 to August 31 for most eagles, hawks, falcons, and owls and April 15 to September 15 for*

burrowing owls), TWE would be required to conduct a breeding raptor survey and implement appropriate mitigation measures, such as buffer zones around active nests, as needed.

Effectiveness: In order to minimize impacts to raptors during the breeding season, TWE has committed to implement seasonal timing restrictions in appropriate areas (TWE-32). More specifically, **WLF-1** would require TWE to conduct a preconstruction breeding raptor survey and to implement appropriate mitigation measures, such as buffer zones around active nests, as needed. More specifically, **WLF-1** would require TWE to avoid habitat removal on currently undisturbed lands, to the extent possible, between February 1 to July 31 in Wyoming or, alternatively, to conduct breeding bird surveys and implement appropriate mitigation in coordination with the BLM, USFWS, Western, and WGFD.

Several factors would minimize potential impacts to nongame species, raptors, and other migratory birds as a result of the construction of the Northern Terminal. The Northern Terminal is located in an area that already has a high level of human presence and noise (e.g., I-80, town of Sinclair). Also, implementation of TWE-32 and **WLF-1** would reduce impacts during the breeding season. Remaining impacts to nesting raptor and migratory bird species within the Region I wildlife analysis area would be limited primarily to habitat loss and fragmentation.

TWE has committed to developing an operational policy and a comprehensive strategy for collecting data, minimizing impacts, and mitigating loss of migratory birds and essential habitats prior to the initiation of construction. This policy and strategy will be incorporated into a single, over-arching document (Avian Protection Plan or Bird Conservation Strategy) that will include a full listing of all minimization measures included in this analysis, as well as recommendations from the USFWS and additional information included within the Avian Protection Plan Guidelines, developed by the USFWS and APLIC in 2005 (APLIC 2012).

Southern Terminal and Alternate Southern Terminal

Southern Terminal Habitat Disturbance and Fragmentation

The existing conditions at the proposed Southern Terminal Siting area relative to wildlife habitat can be characterized as moderately disturbed and fragmented. The majority of human disturbance near the siting area results from Interstate Highway 95 located approximately 3.5 miles to the east. This highway is a major source of fragmentation in the local area. The Solar One energy plant located approximately 1.5 miles to the southwest of the siting area contributes to existing disturbance and fragmentation within the siting area. Several existing large transmission lines are located adjacent to the Southern Terminal siting area resulting in further fragmentation of the local landscape.

Construction of the Southern Terminal and the Alternate Southern Terminal would mostly occur in developed/disturbed areas that are not considered to be typical wildlife habitat. Eleven percent of the siting area is desert shrubland. Consequently, species associated with this habitat type in the region (e.g., mourning dove, greater roadrunner, greater short-horned lizard, bushy-tailed woodrat) potentially could be impacted. The Alternate Southern Terminal would potentially impact more desert shrubland habitat than the Southern Terminal, but no substantive impacts resulting from construction of the Southern Terminal or the Alternate Southern Terminal are anticipated.

Southern Terminal located near IPP (Design Option 2)

Construction of the Southern Terminal located near IPP (Design Option 2) would mostly occur in grassland, greasewood flat, and saltbush shrubland vegetation communities. Approximately 77 percent of the siting area is saltbush shrubland. Consequently, species associated with this habitat type in the region (e.g., western meadowlark, badger, white-tailed jackrabbit, gophersnake) potentially could be impacted.

Southern Substation located near IPP (Design Option 3)

The Southern Substation located near IPP (Design Option 3) is entirely within the boundaries of the Southern Terminal (Design Option 2). Construction impacts to wildlife species would be anticipated to be similar to those resulting from construction of the preferred alternative.

Operation Impacts

Acres of operation disturbance are presented in the big game species, small game species, and nongame species discussions above. Impacts from operations to these taxa groups are similar to those presented in construction; however, they are less intensive and longer in duration. The additional operation-related impact discussion below describes specific potential for bird mortality during operation of the project.

Northern Terminal

The primary operation-related impact to wildlife, particularly birds, is mortality as a result of electrocution or collision. As described in Section 2.4.3.1, six 500-kV AC line positions, three 500/230-kV transformer banks, eight 230-kV line positions, two 500-kV AC filter line positions, two DC line positions with transformers, converter building(s), and AC and DC filter yards would be constructed at the Northern Terminal. Depending on the design of the facility and the kV capacity, transmission lines and transformers pose an electrocution hazard for bird species, especially raptors, which attempt to perch on the structures. Transmission line configurations greater than 69-kV typically do not present a high risk of avian electrocution, based on conductor placement and orientation (APLIC 2006). The transmission lines also would incrementally increase the collision potential for migrating and foraging bird species. However, collision potential typically is dependent on variables such as the location in relation to high-use habitat areas (e.g., nesting, foraging, and roosting); line orientation to flight patterns and movement corridors; species composition; visibility; and line design (APLIC 2006).

To minimize potential operation-related impacts to raptors and other migratory birds, TWE's design feature (TWE-30) requires that the Project meet or exceed the raptor safe design standards described in the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006). Therefore impacts to wildlife species, particularly raptors, from operation of the Northern Terminal would be limited to habitat loss, fragmentation, collision, and disturbance during normal maintenance activities.

TWE has committed to developing an operational policy and a comprehensive strategy for collecting data, minimizing impacts, and mitigating loss of migratory birds and essential habitats prior to the initiation of construction. This policy and strategy will be incorporated into a single, over-arching document (Avian Protection Plan or Bird Conservation Strategy) that will include a full listing of all minimization measures included in this analysis, as well as recommendations from the USFWS and additional information included within the Avian Protection Plan Guidelines, developed by the USFWS and APLIC in 2005 (APLIC 2012).

Southern Terminal and Alternate Southern Terminal

Operation of the Southern Terminal or the Alternate Southern Terminal would occur in developed/disturbed areas that are not considered to be typical wildlife habitat. Eleven percent of the siting area is desert shrubland. Consequently, species associated with this habitat type in the region (e.g., mourning dove, greater roadrunner, greater short-horned lizard, bushy-tailed woodrat) potentially could be impacted. The Alternate Southern Terminal would potentially impact more desert shrubland habitat than the Southern Terminal, but no substantive impacts resulting from operation of the Southern Terminal or the Alternate Southern Terminal.

Southern Terminal located near IPP (Design Option 2)

Operation of the Southern Terminal located near IPP (Design Option 2) would mostly occur in grassland, greasewood flat, and saltbush shrubland vegetation communities. Approximately 77 percent of the siting

area is saltbush shrubland. Consequently, species associated with this habitat type in the region (e.g., western meadowlark, badger, white-tailed jackrabbit, gophersnake) potentially could be impacted.

Southern Substation located near IPP (Design Option 3)

The Southern Substation located near IPP (Design Option 3) is entirely within the boundaries of the Southern Terminal (Design Option 2). Operation impacts to wildlife species would be anticipated to similar to those resulting from construction of the preferred alternative.

Decommissioning Impacts

Impacts to wildlife during decommissioning of the Northern, Southern, Alternate Southern Terminals, Southern Terminal located near IPP (Design Option 2), or the Southern Substation located near IPP (Design Option 3) would be similar to, but substantially less intensive than construction impacts.

Design Option 2 – DC from Wyoming to IPP; AC from IPP to Marketplace Hub

Because the implementation of Design Option 2 would utilize the same alternative routes and construction techniques as the proposed Project, impacts to wildlife from construction and operation of Design Option 2 would be similar to those discussed under the alternative routes. Differences between Design Option 2 and the proposed Project include the locations of the Southern Terminal and ground electrode system, as well as the addition of a series compensation station midway between IPP and Marketplace. The Southern Terminal would be located near IPP in Utah instead of near Marketplace in Nevada, and the ground electrode system would be within 50 miles of IPP. Impacts to vegetation from construction and operation of a converter station near IPP, ground electrode system, and series compensation station can be related to wildlife, and are discussed in Section 3.5.6.7.

Table 3.7-20 provides a summary of impacts associated with Design Option 2. Impacts from Design Option 2 facilities would be similar to impacts described in Section 3.7.6.1, Impacts from Terminal Construction and Operation, and Section 3.7.6.2, Impacts Common to all Alternative Routes and Associated Components. The same design features, BMPs, and mitigation measure listed for the Northern Terminal would be implemented to minimize impacts resulting from Design Option 2. Impacts to each wildlife habitat type would be less than 1 percent of the total of each habitat type in the wildlife analysis area.

Table 3.7-20 Summary of Design Option 2 Alternative Ground Electrode Siting Area Impact Parameters for Wildlife

Design Option 2 Converter/Substation
• Approximately 36 acres of construction and 22 acres of operation impacts to pronghorn crucial yearlong range would occur. • Approximately 181 acres of construction and 113 acres of operation impacts to small game and nongame potential habitat would occur. • Approximately 7 acres of construction and 4 acres of operation impacts to waterfowl potential habitat would occur.

[1] Length refers to length of transmission lines and lines serves as a proxy metric for avian collision potential.

Design Option 3 – Phased Build Out

Because the implementation of Design Option 3 would utilize the same alternative routes, facilities, and construction techniques as the proposed Project, albeit in a phased approach, impacts to wildlife from construction and operation of Design Option 3 would be the same as those discussed under the alternative routes.

Table 3.7-21 provides a summary of impacts associated with Design Option 3.

Table 3.7-21 Summary of Design Option 3 Substation Impact Parameters for Wildlife

Design Option 3 Substation
• Approximately 34 acres of construction and 15 acres of operation impacts to pronghorn crucial yearlong range would occur. • Approximately 170 acres of construction and 75 acres of operation impacts to small game and nongame potential habitat would occur. • Approximately 1 acre of construction and 1 acre of operation impacts to waterfowl potential habitat would occur.

3.7.6.2 Impacts to Wildlife Common to All Alternative Routes and Associated Components

Potential impacts to wildlife species from the alternative routes can be grouped into two main categories, construction and operation. Construction-related impacts are primarily habitat loss, fragmentation, and wildlife mortalities as a result of vehicle collisions and crushing of nests/burrows. Construction impacts account for all disturbance during construction of the Project (e.g., clearing of vegetation for footing construction, upgrading access roads, etc.). Operation impacts are defined as impacts that remain after reclamation is complete and will last at least as long as the Project is in operation and maintenance activities are conducted. Construction-related impacts are typically short-term, whereas operation impacts are typically long-term. Examples of potential operation impacts include habitat disturbance in areas where facilities will be sited, periodic vegetation management activities, wildlife mortalities that occur as a result of maintenance activities, increased predation of local prey populations by perching raptors, and habitat degradation resulting from increased noise and human activity in and along the 2-mile transmission line corridor. During operation of the Project, a portion of habitat disturbed during construction would not be reclaimed until after the end of the Project's design life (decommissioning).

Habitat impacts can be further categorized as direct and indirect. Direct habitat impact results when habitat is destroyed or converted to a form that is unsuitable for the impacted species. The primary potential indirect impact is wildlife avoidance (displacement) of otherwise suitable habitat in and around the Project disturbance areas during construction and operation.

The primary operation-related impact associated with transmission lines and associated facilities are wildlife mortalities as a consequence of electrocution or collision with transmission line components. Other potential impacts include habitat avoidance of otherwise suitable habitat due to the presence of a transmission line, and the increased noise and human presence that are the result of routine maintenance activities.

<u>Construction Impacts</u>

Construction of the proposed Project would result in the alteration, degradation, and loss of wildlife habitat, of which a percentage would be immediately reclaimed following construction of the facilities. The remaining disturbance area would be reclaimed at the end of the life of the project (estimated at 50 years). Recovery times of the various vegetation communities that provide habitat for the species within the wildlife analysis area are discussed in Section 3.5, Vegetation.

Habitat loss or alteration from surface disturbance would result in direct losses of smaller, less mobile species of wildlife, such as small mammals and reptiles, and the displacement of more mobile species into adjacent habitats. Surface disturbance also would result in an increase in habitat fragmentation along the proposed Project until reclamation has been completed and vegetation is re-established.

The road network, which would be constructed or upgraded to fulfill the construction requirements of the proposed Project, may impact wildlife species to varying degrees depending on the geographical location, type of habitat disturbed, and wildlife species potentially impacted. There are seven general impacts to wildlife habitat associated with roads including: 1) increased mortality from road construction; 2) increased mortality from collisions with vehicles; 3) modification of wildlife behavior; 4) alteration of the physical

environment; 5) alteration of the chemical environment; 6) spread of invasive and exotic species; and 7) increased alteration and use of habitats by humans (Trombulak and Fissell 2000). Not all species and ecosystems are equally impacted by roads, but overall the presence of roads is highly correlated with changes in species composition, population sizes, and hydrologic and geomorphic processes that shape aquatic and riparian habitats (Trombulak and Fissell 2000).

Game Species

Potential direct impacts to big game species (e.g., pronghorn, mule deer, elk, moose, Rocky Mountain bighorn sheep, and desert bighorn sheep) would include the incremental loss of potential forage and the increase of habitat fragmentation from vegetation removal associated with surface disturbance. The primary potential indirect impact would be wildlife avoidance (displacement) of otherwise suitable habitat in the vicinity of Project disturbance areas due to noise and human activity. Impacts due to disturbance may also include both short-term and permanent changes to big game migration corridors during periods of construction and operation activity. Impacts would be more pronounced within big game crucial winter range and desert bighorn sheep occupied habitat. Impacts to crucial winter range would include the loss of potential cover and forage consisting primarily of woody/shrubby vegetation such as sagebrush, bitterbrush, and winterfat. Loss of available forage (e.g., woody shrubs, such as sagebrush) would result in a long-term (greater than 25 years) impact to wintering big game species.

Construction of the proposed Project would result in direct impacts to small game species (i.e., upland game birds, small game mammals, furbearers, and waterfowl) and would include the loss of potentially suitable habitat. Small game species such as the Columbian sharp-tailed grouse, greater sage-grouse, and pygmy rabbit have designated protections (e.g., BLM sensitive, USFS sensitive, state-protected, etc.) and are discussed further in Section 3.8, Special Status Wildlife Species. Impacts from the construction of the alternative routes also would include animal displacement from the disturbance areas and increased habitat fragmentation, until reclamation has been completed and vegetation is re-established. Potential impacts also could include nest and burrow abandonment or loss of eggs or young. These losses could reduce productivity for that breeding season, depending on timing and duration of construction activities in a specific area. Indirect impacts associated with human activity and noise have been shown to negatively impact small game populations, especially upland game birds. These species may experience increased mortality rates due to increased access as a result of new and improved roads (Holbrook and Vaughan 1985). Vehicular traffic may injure or kill individuals, and local populations may experience higher levels of hunting and poaching pressure, due to improved human access (Holbrook and Vaughan 1985). In most instances, suitable habitat adjacent to disturbance areas would be available for use by small game species.

Implementation of TWE-32 and TWE-33 (summarized above and found in **Appendix C**), as well as BLM, USFS, and state wildlife agency restrictions to prevent disturbance to wintering big game species in identified crucial winter range from November 15 to April 30, would minimize direct impacts to wintering big game species. Similarly, through implementation of TWE's design feature (TWE-32), direct impacts to small game species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts from construction of the proposed Project would be limited primarily to habitat loss and fragmentation.

Nongame Species

The types of impacts to nongame species (e.g., small mammals, reptiles) would be similar to those discussed for small game species. Nongame species such as the Wyoming pocket gopher, midget faded rattlesnake, and desert iguana have designated protections (e.g., BLM sensitive, USFS sensitive, state-protected, etc.) and are discussed further in Section 3.8 Special Status Wildlife Species.

Implementation of TWE's design feature (TWE-32) would limit direct impacts to nongame species during sensitive periods (e.g., nesting and breeding). Therefore, impacts from construction of the proposed Project would be limited primarily to habitat loss and fragmentation.

Raptors and Other Migratory Birds

A number of raptor species that are not classified as special status (e.g., Cooper's hawk, northern harrier, American kestrel, red-tailed hawk, and great-horned owl) may either seasonally occupy or remain as yearlong residents in the habitats found within the wildlife analysis area. Potential direct impacts to raptors would include the loss of potentially suitable breeding, roosting, and foraging habitat. Impacts to raptor species can result from the loss or alteration in habitat, reduction in prey base, and increased human disturbance, particularly during the breeding season. The loss of native habitat to human development has resulted in declines of hawks and eagles throughout the West (Boeker and Ray 1971; Schmutz 1984). In some cases, habitat changes have not reduced numbers of raptors, but have resulted in shifts in species composition (Harlow and Bloom 1987). Impacts to small mammal populations due to habitat loss and fragmentation can result in a reduced prey base for raptors, causing lower raptor densities. Thompson et al. (1982) and Woffinden and Murphy (1989) found that golden eagles and ferruginous hawks had lowered nesting success where native vegetation had been lost and the habitat was unable to support jackrabbit (prey) populations. Furthermore, raptors have a high potential of being disturbed from nests and roosts, which contributes to displacement and reduced nesting success (Holmes et al. 1993; Postovit and Postovit 1987; Stalmaster and Newman 1978).

The availability of raptor nest data, which is typically associated with project surveys, is not an accurate portrayal of the actual distribution and abundance of nesting raptors. The availability of aptor nest data tends to be biased based on whether previous surveys have been conducted in association with other projects. Alternatives that are proposed in areas where other linear projects have not occurred cannot be directly compared to alternatives that may be paralleling exiting linear features where surveys were previously completed. In addition, inactive raptor nests are difficult to attribute to a specific species. Data is often reported as "species unknown". Nonetheless, the number of known raptor nests (active and inactive) along a project alternative is valuable information to be presented in analyses. Prior to construction, a comprehensive raptor nest survey will be conducted for the agency preferred alternative. If construction of the proposed Project was to occur during the raptor breeding season (approximately January 1 to August 15, depending on the species and location), impacts to breeding raptors could include the possible loss of nests or nest abandonment due to increased noise and human activity in proximity to an active nest site. Special status raptor species are addressed in Section 3.8, Special Status Wildlife Species.

As presented above, a total of 21 IBAs and 49 BHCAs occur within the wildlife analysis area. As discussed in Section 3.7.4.3, Wildlife, these areas support a higher diversity of migratory bird species than surrounding areas and encompass critical breeding, foraging, or migration habitat for both common and sensitive migratory bird species. Migratory bird species that may be impacted by construction activities include nesting passerines or songbirds that utilize the various habitats found within the wildlife analysis area. Potential direct impacts to migratory birds would include the construction and operation disturbance of potentially suitable breeding, roosting, and foraging habitat. Impacts to migratory bird species can result from the loss or alteration of habitat, reduction in forage base, and increased human disturbance, especially during the breeding season. If construction of the proposed Project was to occur during the migratory bird breeding season (approximately March 1 to July 31, depending on the state), impacts to breeding birds could include the loss of nests or nest abandonment caused by increased noise and human activity in proximity to an active nest site.

***WLF-1**: For the protection of breeding migratory birds, **WLF-1** requires TWE to avoid migratory bird habitat removal on currently undisturbed lands, to the extent possible, between approximately February 1 and July 31 (depends on state) or, alternately, to conduct breeding migratory bird surveys and implement appropriate mitigation in coordination with the BLM, Bureau of Reclamation, CPW, NDOW, UDWR, USFS, USFWS, Western, and WGFD. In addition, in order to avoid impacts to raptors during the breeding season (January 1 to August 31 for most eagles, hawks, falcons, and owls and April 15 to September 15 for burrowing owls), TWE would be required to conduct a breeding raptor survey and implement appropriate mitigation measures, such as buffer zones around active nests, as needed.*

Effectiveness: In order to minimize impacts to raptors during the breeding season (February 1 to August 15), TWE has committed to implement seasonal timing restrictions in appropriate areas (TWE-32). More specifically, **WLF-1** would require TWE to conduct a preconstruction breeding raptor survey and implement appropriate mitigation measures, such as buffer zones around occupied nests, as needed. To minimize impacts to migratory birds during the breeding season, TWE also has committed to implement seasonal timing restrictions in applicable areas (TWE-32). More specifically, **WLF-1** would require TWE to avoid habitat removal on currently undisturbed lands, to the extent possible, between March 1 and July 31 (depending on the state) or, alternately, to conduct breeding bird surveys and implement appropriate mitigation in coordination with the BLM, CPW, NDOW, UDWR, USFS, USFWS, Western, and WGFD.

Implementation of TWE-32 and **WLF-1** would reduce impacts during the breeding season. Remaining impacts to nesting raptor and migratory bird species within the wildlife analysis area would be primarily limited to habitat loss and fragmentation.

TWE has committed to developing an operational policy and a comprehensive strategy for collecting data, minimizing impacts, and mitigating loss of migratory birds and essential habitats prior to the initiation of construction. This policy and strategy will be incorporated into a single, over-arching document (Avian Protection Plan or Bird Conservation Strategy) that will include a full listing of all minimization measures included in this analysis, as well as recommendations from the USFWS and additional information included within the Avian Protection Plan Guidelines, developed by the USFWS and APLIC in 2005 (APLIC 2012).

Analysis of Wildlife Impacts as a Result of Human Activity and Noise

Indirect impacts from the construction of the proposed Project would result from increased human activity and noise in the vicinity of the terminal locations and the approved 2-mile transmission line corridor. The most common wildlife responses to noise and human activity are avoidance or accommodation. Avoidance would result in displacement of animals from an area larger than the actual disturbance area. Following avoidance of human activity and noise-producing areas during construction, certain wildlife species may acclimate to the activity and begin to return to areas that were formerly avoided. For example, during construction, it is likely that big game species (i.e., pronghorn, mule deer) would be displaced from a larger area than the actual disturbance sites due to the avoidance response. Displacement of big game species as a result of direct habitat loss and indirect reduction in habitat quality has been widely documented (Irwin and Peek 1983; Lyon 1983, 1979; Rost and Bailey 1979). Studies have shown that big game species tend to move away from areas of human activity and roads; thereby reducing habitat utilization near disturbance areas (Cole et al. 1997; Sawyer et al. 2006). However, big game species have demonstrated the ability to acclimate to a variety of activities as long as human harassment levels do not increase substantially (Forman et al. 2003). Therefore, it is possible that the extent of displacement would approximate the actual disturbance area after the first few years of operation (Forman et al. 2003). Mule deer and pronghorn appear to be more tolerant of human activity than desert bighorn sheep. For mule deer, displacement distances from new roads ranged from 330 feet to 0.6 mile, depending on the presence of vegetative cover (Rost and Bailey 1979, as cited in Forman et al. 2003). However, disturbance associated with construction activities would occur over a relatively short period, and it is assumed that big game species would return to the area following completion of Project construction. In addition to an avoidance response, increased human activity intensifies the potential for wildlife/human interactions ranging from harassment of big game species to legal harvest or poaching.

Noise levels associated with construction may impact migratory bird species that occupy habitats in the 2-mile transmission line corridor. Studies also have shown that reductions in bird population densities in both open grasslands and woodlands also may be attributed to a reduction in habitat quality produced by elevated noise levels (Reijnen et al. 1997, 1995). Although visual stimuli in open landscapes may contribute to reduced bird densities at relatively short distances, the impacts of noise appear to be the most critical factor since breeding birds of open grasslands (threshold noise range of 43 to 60 decibels on the A-weighted scale [dBA]) and woodlands (threshold noise range of 36 to 58 dBA) respond very similarly

to disturbance by traffic volume (Reijnen et al. 1997). Reijnen et al. (1996) determined a threshold of effect for bird species to be 47 dBA, while a New Mexico study in a pinyon-juniper community found that impacts of gas well compressor noise on bird populations were strongest in areas where noise levels were greater than 50 dBA. However, moderate noise levels (40 to 50 dBA) also showed some effect on bird densities in this study (LaGory et al. 2001).

For the purposes of this programmatic analysis, the total extent of indirect habitat loss as a result of the wildlife avoidance response is estimated to be the same as the construction noise attenuation distance so that it could be applied across all wildlife species. The analysis conservatively assumes habitat to be flat terrain with no atmospheric conditions or other potential dampening effects, so that construction noise would dissipate to ambient noise levels at a distance of approximately 6,400 feet (1.2 miles). Because many areas along the proposed 2-mile transmission line corridor and its alternatives are characterized by topographic variation and woody vegetation (e.g. shrubland, woodland, forest), this approach likely overestimates potential noise impacts. Using this distance from the 250 foot-wide transmission line ROW and considering the potential for access road development within the 2-mile transmission line corridor, this analysis reports all acreages of habitat within the 2-mile transmission line corridor as being potentially indirectly impacted by noise and human activity. While actual locations of access roads are not yet known and construction would not impact all acres within the 2-mile transmission line corridor, this methodology accounts for areas with more potential for being indirectly impacted by noise and human activity and counterbalances those acreages at the edge of the 2-mile transmission line corridor where the access roads would tie into existing roads. These impacts would occur during Project construction. Subsequent impact summary tables for each of the Project regions present these acreages of indirect impacts.

Several factors would minimize the potential impacts related to human activity and noise during construction of the proposed Project. TWE would implement a mandatory employee biological education program for all personnel working within the 250-foot-wide transmission line ROW and the 2-mile transmission line corridor for potential access roads (TWE-33). This would consist of all contractor and subcontractor personnel and others involved in construction activities being notified of known occurrence of protected species or habitat in the construction area. Sensitive areas will be considered avoidance areas. Prior to any construction activity, avoidance areas will be marked on the ground and maintained through the duration of the contract. TWE's design feature to implement seasonal timing restrictions in certain areas (TWE-32) would help avoid impacts to wildlife during sensitive periods (e.g., nesting and breeding periods). Implementation of **WLF-1** would further define how TWE would avoid impacts to breeding bird species by requiring implementation of seasonal timing restrictions and protection buffers during the raptor and migratory bird breeding seasons. Implementation of the BLM, USFS, and state wildlife agency big game crucial winter timing stipulation would prohibit Project development within big game crucial winter range from approximately November 15 to April 30 (depending on species, state, and management agency), which would reduce impacts to wintering big game species. Remaining noise and human activity impacts to wildlife species within the Region I wildlife analysis area would be limited to habitat avoidance outside of key breeding periods within important habitat types and protection buffers.

<u>Operation Impacts</u>

Game Species

Operation-related impacts to big game and small game species would result primarily from vegetation management and other maintenance activities, including reconnaissance flights for transmission line inspection. Depending on species sensitivity, some species may experience disruption or additional stress due to overhead flights. Vegetation maintenance would have impacts similar to those described above for construction activities. Noise and human activity impacts also are discussed above. Small game species would have potential increased risk of predation by raptor and corvid species, which may perch on transmission lines and towers.

Nongame Species

Potential impacts to nongame species are similar to those discussed above for game species. Additional operation-related impacts to raptors and other migratory birds and bats are discussed below. Operation-related impacts to bat species would be similar to those described below for avian species.

Raptors and Other Migratory Birds

The primary operation-related impacts to birds are mortalities as a result of electrocution and collision with transmission line components. Maintenance activities (vegetation management, ground or air inspections, and repair work) would have indirect impacts, but would be less intense, shorter in duration, and smaller in acreage extent than those described above in the Construction Impacts section and discussed below under indirect construction impacts by region. As described in Section 2.1, the proposed Project would consist of the operation of a 600-kV DC transmission line and two AC/DC converter stations. Transmission lines and transformers pose an electrocution hazard for bird species, especially raptors, which attempt to perch on the structures. However, configurations greater than 69 kV typically do not present a high electrocution potential, based on conductor placement and orientation (APLIC 2006). Avian predators, particularly raptors, are attracted to overhead utility lines because they provide perches for various activities, including hunting (APLIC 2006). Power poles increase a raptor's range of vision, allow for greater speed during attacks on prey, and serve as territorial markers (APLIC 2006; Manville 2002; Steenhof et al. 1993). Transmission line structures can impact small game, nongame, migratory bird, reptile, and amphibian populations by enhancing raptor and corvid populations. Raptors and corvids nest and perch on transmission structures, which create vertical structure in generally treeless shrub-steppe habitats (Knight and Kawashima 1993; Steenhof et al. 1993). Raptors and corvids may then occur at higher densities than normal due to increased nesting locations and perches. For example, within one year of construction of a 372.5-mile transmission line in southern Idaho and Oregon, raptors and common ravens began nesting on the supporting poles. Within ten years of construction, 133 pairs of raptors and ravens were nesting along this stretch (Steenhof et al. 1993). Along a transmission line in Nevada, the mean number of the most common raptor species observed over a six–year period one year prior to and five years after construction of the line remained relatively stable. However, the mean number of common ravens seen per survey point dramatically increased during the first four years after construction before declining drastically the fifth year after construction (Blomberg and Sedinger 2008).

The transmission lines also would incrementally increase the collision potential for migrating and foraging bird species. Collision potential typically is dependent on variables such as the location in relation to high-use habitat areas (e.g., nesting, foraging, and roosting); line orientation to flight patterns and movement corridors; species composition; visibility; and line design (APLIC 2006). However, avian mortality from collisions with power lines is well documented (Brown and Drewien 1995). Although rarely impacting healthy populations with good reproductive potential, collision mortality can be biologically significant to small local populations (Beer and Ogilvie 1972) and endangered species (Faanes 1987; APLIC 1994). Avian loss is often greatest where power lines cross migratory paths, bisect feeding and nesting-roosting sites, or occur adjacent to major avian use areas (Savereno et al. 1996). Higher risk also exists when land topography funnels birds through power-line corridors (Bevanger 1990; Faanes 1987). While some species of birds (e.g., upland game birds and certain grassland migratory birds) are predominantly ground dwelling species, the risk for collision during flight is heavily dependent upon transmission line locations, such as locations between loafing and feeding areas or migration routes. Highest collision probabilities appear to occur where birds typically fly between foraging and loafing habitats bisected with overhead lines (Science Applications International Corporation [SAIC] 2001).

Factors that influence the risk of collision to individual birds as they encounter power lines are varied and include flight characteristics, previous experience with power lines (typically a function of age), weather, and power line structural characteristics (APLIC 2006, 1994; Thompson 1978). The static wire, also referred to as the shield or groundwire, has posed the greatest collision danger to birds (APLIC 1994; Faanes 1987). Research has indicated that most collisions occur with static wires when birds increased

their altitude in apparent attempts to avoid conductor wires. Birds maneuvering to avoid the conductor wires actually increased collision risk, and in the absence of static wires most collisions could have been avoided. If power lines must be placed above ground, the risk of colliding would probably be reduced if all wires were in a single horizontal plane (Bevanger 1994).

Research on communication and meteorological towers suggests that the use of guy wires increases avian collision risk and mortality (Gehring et al. 2009; Manville 2009, 2005; Erickson et al. 2005). Although these types of towers tend to be considerably taller and have more complex guy wire configurations than the transmission line tower designs being considered for this project, the use of guyed transmission towers would be likely to increase avian collision risk relative to unguyed towers. This risk can be expected to be higher for species with high wing loading and rapid flight such as wild turkeys, grouse, and waterfowl. Where guy wires must be used, they should be adequately marked with bird diverters to reduce avian collision risk (Manville 2005; APLIC 1994).

Research conducted by Savereno et al. (1996) indicates that the height of the transmission lines relative to a bird's flight heights could be a potential risk factor. Empirical data and theoretical considerations indicate that species with high wing loading and low aspect run a high risk of colliding with power lines. These birds are characterized by rapid flight, and the combination of heavy body and small wings restricts swift reactions to unexpected obstacles (Bevanger 1998). Raptors have a much greater wing to body ratio, and are more likely to fly at levels well above the transmission line heights, and maintain flight levels for an extended period of time. Other bird species, such as upland game birds, may have a greater potential for collision risk because of the smaller wing to body ratio, resulting in lower flight heights and a greater occurrence of takeoffs and landings crossing the transmission line levels.

Operation-related impacts to raptors and other migratory birds may be more pronounced in areas near Audubon IBAs. As discussed in Section 3.7.4.3, Nongame Species, these areas have unique habitat (e.g., wetlands, playas) or geographical features (e.g., canyons, gorges) that provide important habitat for raptors and other migratory birds throughout the year or during migration.

To minimize potential operation-related impacts to wildlife as a result of the proposed Project, TWE's design feature (TWE-30) requires that the Project meet or exceed the raptor safe design standards described in the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006). Even with implementation of the proposed design features, there would be some remaining potential for avian collisions with the transmission line and towers. However, the potential for electrocution impacts to bird species within the wildlife analysis area would be negligible. Wildlife prey species also would be impacted due to the potential for increased avian predator populations nesting on power line structures. **SSWS-5** (anti-perching within key greater sage-grouse habitat) presented in Section 3.8 also would benefit other wildlife prey species.

TWE has committed to developing an operational policy and a comprehensive strategy for collecting data, minimizing impacts, and mitigating loss of migratory birds and essential habitats prior to the initiation of construction. This policy and strategy will be incorporated into a single, over-arching document (Avian Protection Plan or Bird Conservation Strategy) that will include a full listing of all minimization measures included in this analysis, as well as recommendations from the USFWS and additional information included within the Avian Protection Plan Guidelines, developed by the USFWS and APLIC in 2005 (APLIC 2012).

Decommissioning Impacts

The types of impacts to wildlife during decommissioning of the Project would be similar to, but substantially less intensive than construction impacts.

3.7.6.3 Region I

Alternative I-A (Applicant Proposed)

Alternative I-A Habitat Disturbance and Fragmentation

Alternative I-A would cross approximately 155 miles of wildlife habitat in Wyoming and Colorado. Approximately 62 miles (40 percent) of this alternative will be co-located with other existing transmission lines as shown in **Table 3.7-22**. Existing conditions within the Alternative I-A 2-mile corridor relative to wildlife can be characterized as moderately disturbed and fragmented. Alternative I-A follows the I-80 corridor for approximately 40 miles from Rawlins, Wyoming, to just south of Wamsutter, Wyoming, at which point it turns south towards the Wyoming-Colorado border. This section of Alternative I-A is highly fragmented and disturbed by the highway, several county roads, and high densities of existing oil and gas operations. The remaining segments of Alternative I-A are moderately fragmented by county roads, low density oil and gas and livestock operations, and private residences. A total of 458 miles of existing roads are located within the 2-mile corridor as shown **Table 3.7-22**. This represents the lowest existing road density within the 2-mile corridor amongst Region I alternatives.

Table 3.7-22 Summary of Existing Conditions by Alternative within Region I

Alternative	Total Length (miles)	Length of Greenfield Construction	Length of Co-Located Construction	Miles of Existing Roads within 2-Mile Corridor	Miles of Roads within 2-Mile Corridor/Mile of Alternative
I-A	155	93	62	458	2.95
I-B	159	91	68	461	2.89
I-C	186	88	98	662	3.56
I-D (Agency Preferred)	171	109	63	550	3.20

Table 3.7-23 provides a tabulation of impacts associated with the alternative routes in Region I. Key impact parameters that relate to the impact discussion in Section 3.7.6.2, Impacts to Wildlife Common to All Alternative Routes and Associated Components, and specific differences by alternative are discussed below.

Key Parameters Summary

Game Species

Alternative I-A would result in the direct disturbance to pronghorn, mule deer, and elk crucial winter ranges (**Table 3.7-23**). Implementation of the BLM, CPW, and WGFD restriction to prevent disturbance to wintering big game species in identified crucial winter range from November 15 to April 30, would prevent direct impacts to wintering big game species. Alternative I-A would result in the construction and operation disturbance of 5,159 acres and 512 acres, respectively, of upland game bird, small game mammal, and furbearer habitat. These areas represent 0.10 and <0.01 percent of the available upland game bird, small game mammal, and furbearer habitat within the Region I wildlife analysis area. Alternative I-A also would result in the construction disturbance of 110 acres and operation disturbance of 9 acres of waterfowl habitat. These areas represent 0.13 percent and 0.01 percent of the available waterfowl habitat within the Region I wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to small game species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative I-A would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Table 3.7-23 Summary of Region I Alternative Route Impact Parameters for Wildlife

Parameter	Alternative I-A			Alternative I-B			Alternative I-C			Alternative I-D		
	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts
Big Game Species												
Colorado pronghorn severe winter range (acres)	157	43	12,299	163	38	18,366	248	62	20,068	163	38	18,366
Percentage of existing habitat within the Region I big game analysis area	0.08	0.02	6.19	0.08	0.02	9.25	0.12	0.03	10.11	0.08	0.02	9.25
Wyoming pronghorn crucial winter/yearlong range (acres)	135	37	13,007	125	34	12,175	519	110	45,484	277	64	22,636
Percentage of existing habitat within the Region I big game analysis area	0.03	<0.01	2.68	0.03	<0.01	2.51	0.11	0.02	9.36	0.06	0.01	4.66
Colorado mule deer severe winter range (acres)	207	57	18,366	167	40	22,550	725	187	69,373	167	40	22,550
Percentage of existing habitat within the Region I big game analysis area	0.03	<0.01	2.71	0.02	<0.01	3.33	0.11	0.03	10.24	0.02	<0.01	3.33
Wyoming mule deer crucial winter range (acres)	0	0	0	0	0	0	10	2	4,209	0	0	0
Percentage of existing habitat within the Region I big game analysis area	0	0	0	0	0	0	0.02	<0.01	7.43	0	0	0
Wyoming mule deer crucial winter/yearlong range (acres)	112	29	9,880	113	29	9,999	427	91	34,221	283	59	20,727
Percentage of existing habitat within the Region I big game analysis area	0.04	<0.01	3.23	0.04	<0.01	3.27	0.14	0.03	11.18	0.09	0.02	6.77
Colorado elk severe winter range (acres)	285	77	23,281	377	95	41,047	1,335	345	122,036	377	95	41,047
Percentage of existing habitat within the Region I big game analysis area	0.03	<0.01	2.29	0.04	<0.01	4.04	0.13	0.03	12.00	0.04	<0.01	4.04
Colorado elk parturition range	218	61	20,766	82	23	21,302	<1	<1	32	82	23	21,302
Percentage of existing habitat within Region I big game analysis area	<1	<1	5.61	<1	<1	5.76	<1	<1	<1	<1	<1	5.76

Table 3.7-23 Summary of Region I Alternative Route Impact Parameters for Wildlife

Parameter	Alternative I-A			Alternative I-B			Alternative I-C			Alternative I-D		
	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts
Wyoming elk crucial winter/yearlong range (acres)	24	6	1,782	24	6	1,782	7	2	898	24	6	1,779
Percentage of existing habitat within the Region I big game analysis area	0.01	<0.01	0.86	0.01	<0.01	0.86	<0.01	<0.01	0.44	0.01	<0.01	0.86
Small Game and Nongame Species												
Upland game bird, small game mammal, furbearer, small nongame mammal, migratory bird, and reptile habitat (acres)[1]	5,159	512	207,395	5,252	482	229,262	6,188	599	236,625	5,644	516	247,824
Percentage of existing habitat within the Region I wildlife analysis area	0.10	<0.01	3.96	0.10	<0.01	4.38	0.12	0.01	4.52	0.11	<0.01	4.74
Waterfowl habitat (acres)[2]	110	9	3,427	90	8	3,365	59	7	4,601	120	10	4,343
Percentage of existing habitat within the Region I wildlife analysis area	0.13	0.01	4.03	0.11	<0.01	3.96	0.07	<0.01	5.41	0.14	0.01	5.11
Relative Collision Potential for Migratory Birds												
Length of transmission line (miles)[4]	155			159			186			171		
Raptor Nests (Non-special Status)												
Number within 1 mile of the reference line[3]	60			96			149			202		
Bird Habitat Conservation Areas												
BHCAs crossed by 250 foot-wide transmission line ROW (acres)	1,356			1,304			2,231			1,322		
Percentage of existing BHCA habitat within the Region I wildlife analysis area	0.06			0.06			0.11			0.06		

Table 3.7-23 Summary of Region I Alternative Route Impact Parameters for Wildlife

Parameter	Alternative I-A			Alternative I-B			Alternative I-C			Alternative I-D		
	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts
Audubon Important Bird Areas												
Powder Rim IBA crossed by the 2-mile transmission line corridor (acres)	9,708			9,456			2,023			11,988		
Muddy Creek Wetlands IBA crossed by the 2-mile transmission line corridor (acres)	0			0			2,023			3,131		
Percentage of IBA within the Region I wildlife analysis area	5.84			5.69			1.22			7.21		

[1] Vegetation communities used to calculate acreages of habitat disturbance include agricultural land, aspen forest and woodland, barren/sparsely vegetated, cliff and canyon, desert shrubland, dunes, grassland, greasewood flat, herbaceous wetland, montane grassland, montane shrubland other coniferous forest, other deciduous forest, open water, pinyon-juniper, sagebrush shrubland, saltbush shrubland, tundra, riparian, and woody riparian and wetlands. Further discussion of these vegetation communities is included in Section 3.5.6, Impacts to Vegetation.

[2] Vegetation communities used to calculate acreages of waterfowl habitat disturbance include open water, herbaceous wetland, riparian, and woody riparian and wetlands. Further discussion of these vegetation communities is included in Section 3.5.6, Impacts to Vegetation.

[3] Special status raptor species are addressed in Section 3.8, Special Status Wildlife Species. A total of 175 raptor nests of unknown species are documented in Region I. These nests potentially could be utilized by special status raptor species, thus also are tabulated in Section 3.8.5.3, Region I.

[4] Length refers to length of 600-kV transmission lines, and serves as a proxy metric for avian collision potential.

Nongame Species

Impacts under Alternative I-A would occur as the result of the construction disturbance of 5,159 acres and operation disturbance of 512 acres of small mammal and reptile habitat. These areas represent 0.10 percent and <0.01 percent of the available small mammal and reptile habitat within the Region I wildlife analysis area. Implementation of TWE's design feature (TWE-32) would limit direct impacts to nongame species during sensitive periods (e.g., nesting and breeding). Therefore, impacts would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Raptors and Other Migratory Birds

Potential direct impacts to raptors and other migratory birds under Alternative I-A would include the construction and operation loss of approximately 5,159 acres and 512 acres, respectively, of potentially suitable breeding, roosting, and foraging habitat. These areas represent 0.10 percent and <0.01 percent of potentially suitable raptor and other migratory bird breeding, roosting, and foraging habitat within the Region I wildlife analysis area. The length of Alternative I-A is found in **Tables 3.7-22** and **3.7-23**. Potential impacts to raptors and other migratory birds may occur as a result of collision and electrocution; however, TWE's design feature (TWE-30) requires that the Project meet or exceed the raptor safe design standards described in the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006). In addition, 60 raptor nests that are not classified as special status occur within 1 mile of the reference line under Alternative I-A (**Tables 3.7-23** and **3.7-24**). In order to minimize impacts to raptors during the breeding season (January 1 to August 15), TWE has committed to implementing seasonal timing restrictions in applicable areas (TWE-32). While this design feature and BMPs presented in **Appendix C** would help to minimize impacts, additional mitigation is proposed. **WLF-1** would require TWE to conduct a breeding raptor survey and implement appropriate mitigation measures, such as buffer zones around occupied nests, as needed. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to raptors and other migratory birds would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities. There would be negligible potential for electrocution under Alternative I-A. **Table 3.7-24** presents known raptor nests within 1 mile of the reference line corridor in Region I.

Table 3.7-24 Non-special Status Raptor Nests Documented Within 1 Mile of the Reference Line in Region I

Species	Alternative I-A	Alternative I-B	Alternative I-C	Alternative I-D	Tuttle Easement Micro-siting Option 1	Tuttle Easement Micro-siting Option 2	Tuttle Easement Micro-siting Option 3	Tuttle Easement Micro-siting Comparable Portion of Alternative I-D	Mexican Flats alternative Connector	Baggs Alternative Connector	Fivemile Point North Alternative Connector	Fivemile Point South Alternative Connector
Northern harrier	2	2	3	2	0	0	0	0	0	0	1	0
Cooper's hawk	1	1	3	2	0	0	0	0	0	1	1	0
Red-tailed hawk	5	20	25	14	0	0	0	0	0	6	6	0
American kestrel	3	8	9	3	0	0	0	0	0	1	1	0
Great horned owl	1	4	5	3	0	0	0	0	0	1	4	0

Table 3.7-24 Non-special Status Raptor Nests Documented Within 1 Mile of the Reference Line in Region I

Species	Alternative I-A	Alternative I-B	Alternative I-C	Alternative I-D	Tuttle Easement Micro-siting Option 1	Tuttle Easement Micro-siting Option 2	Tuttle Easement Micro-siting Option 3	Tuttle Easement Micro-siting Comparable Portion of Alternative I-D	Mexican Flats alternative Connector	Baggs Alternative Connector	Fivemile Point North Alternative Connector	Fivemile Point South Alternative Connector
Common raven	1	1	1	1	0	0	0	0	0	0	0	0
Unknown raptor species	47	60	103	177	24	24	24	24	3	31	6	1
Totals	60	96	149	202	24	24	24	24	3	40	19	1

[1] Special status raptor species are presented in Section 3.8, Special Status Wildlife.

Sources: BLM Vernal FO 2009, 2011; BLM Rawlins FO 2009, 2010; BLM Rock Springs FO 2009; BLM Cedar City FO 2010, 2012; BLM Price FO 2008; BLM Ely FO 2007; BLM Little Snake FO 2011; EPG 2012, Manti-LaSal National Forest 2012; Ashley National Forest 2010; Uintah National Forest 2011; CDOW, BLM, USFS cooperative dataset 2009; NDOW 2012, AECOM 2012..

TWE has committed to developing an operational policy and a comprehensive strategy for collecting data, minimizing impacts, and mitigating loss of migratory birds and essential habitats prior to the initiation of construction. This policy and strategy will be incorporated into a single, over-arching document (Avian Protection Plan or Bird Conservation Strategy) that will include a full listing of all minimization measures included in this analysis, as well as recommendations from the USFWS and additional information included within the Avian Protection Plan Guidelines, developed by the USFWS and APLIC in 2005 (APLIC 2012).

Alternative I-B

Alternative I-B Habitat Disturbance and Fragmentation

Alternative I-B would cross approximately 159 miles of wildlife habitat in Wyoming and Colorado. Approximately 68 miles (43 percent) of this alternative will be co-located with other existing transmission lines as shown in **Table 3.7-22**. Existing conditions within the Alternative I-B 2-mile corridor relative to wildlife can be characterized as moderately disturbed and fragmented. Alternative I-B follows the I-80 corridor for approximately 40 miles from Rawlins, Wyoming, to just south of Wamsutter, Wyoming, at which point it turns south towards the Wyoming-Colorado border. This section of Alternative I-B is highly fragmented and disturbed by the highway, several county roads, and high densities of existing oil and gas operations. The remaining segments of Alternative I-B are moderately fragmented by county roads, low density oil and gas and livestock operations, and private residences. A total of 461 miles of existing roads are located within the 2-mile corridor as shown **Table 3.7-22**. This represents the third highest existing road density within the 2-mile corridor amongst Region I alternatives.

Game Species

The types of impacts to big game species under Alternative I-B generally would be the same as described for Alternative I-A, but would differ in the amount of habitat disturbed. **Table 3.7-23** presents a comparison of impacts to habitat in Region I. Alternative I-B would result in the construction and operation disturbance to 5,252 acres and 482 acres, respectively, of potentially suitable upland game bird, small game mammal,

and furbearer habitat. These areas represent 0.10 percent and <0.01 percent of the available upland game bird, small game mammal, and furbearer habitat within the Region I wildlife analysis area. Alternative I-B also would result in the construction disturbance of 90 acres and operation disturbance of 8 acres of waterfowl habitat. These areas represent 0.11 percent and <0.01 percent of the available waterfowl habitat within the Region I wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to small game species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative I-B would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Nongame Species

The types of impacts to nongame species under Alternative I-B generally would be the same as those described for Alternative I-A, but would differ in the amount of habitat disturbed. **Table 3.7-23** presents a comparison of impacts to habitat in Region I. Alternative I-B would result in the construction and operation disturbance of 5,252 acres and 482 acres, respectively, of potentially suitable small mammal and reptile habitat. These areas represent 0.10 percent and <0.01 percent of the available small mammal and reptile habitat within the Region I wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to nongame species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative I-B would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Raptors and Other Migratory Birds

The types of impacts to raptors and other migratory birds under Alternative I-B generally would be the same as those described for Alternative I-A, but would differ in the amount of habitat disturbed. **Table 3.7-23** presents a comparison of impacts to habitat in Region I. Alternative I-B would result in the construction and operation disturbance of 5,252 acres and 482 acres, respectively, of potentially suitable raptor and other migratory bird breeding, roosting, and foraging habitat. These areas represent 0.10 percent and <0.01 percent of potentially suitable raptor and other migratory bird breeding, roosting, and foraging habitat within the Region I wildlife analysis area. The length of Alternative I-B is found in **Tables 3.7-22** and **3.7-23**. Potential impacts to raptors and migratory birds may occur as a result of collision and electrocution; however, TWE's design feature (TWE-30) requires that the Project meet or exceed the raptor safe design standards described in the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006). In addition, 96 raptor nests that are not classified as special status occur within 1 mile of the reference line under Alternative I-B (**Table 3.7-24**). In order to minimize impacts to raptors during the breeding season (January 1 to August 15), TWE has committed to implementing seasonal timing restrictions in applicable areas (TWE-32). While this design feature and BMPs presented in **Appendix C** would help to minimize impacts, additional mitigation is proposed. **WLF-1** would require TWE to conduct a breeding raptor survey and implement appropriate mitigation measures, such as buffer zones around occupied nests, as needed. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to raptors and other migratory birds under Alternative I-B would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities. There would be negligible potential for electrocution under Alternative I-B.

TWE has committed to developing an operational policy and a comprehensive strategy for collecting data, minimizing impacts, and mitigating loss of migratory birds and essential habitats prior to the initiation of construction. This policy and strategy will be incorporated into a single, over-arching document (Avian Protection Plan or Bird Conservation Strategy) that will include a full listing of all minimization measures included in this analysis, as well as recommendations from the USFWS and additional information included within the Avian Protection Plan Guidelines, developed by the USFWS and APLIC in 2005 (APLIC 2012).

Alternative I-C

Alternative I-C Habitat Disturbance and Fragmentation

Alternative I-C would cross approximately 186 miles of wildlife habitat in Wyoming and Colorado. Approximately 98 miles (53 percent) of this alternative will be co-located with other existing transmission lines as shown in **Table 3.7-22**. Existing conditions within the Alternative I-C 2-mile corridor relative to wildlife can be characterized as moderately disturbed and fragmented. Alternative I-C follows the I-80 corridor for approximately 32 miles from Rawlins, Wyoming, to just south of Creston junction, Wyoming, at which point it turns south following the State Highway 798 corridor towards the Wyoming-Colorado border. This section of Alternative I-C is highly fragmented and disturbed by the highway, several county roads, and high densities of existing oil and gas operations. The remaining segments of Alternative I-C are moderately fragmented by county roads, low density oil and gas and livestock operations, and private residences. A total of 662 miles of existing roads are located within the 2-mile corridor as shown **Table 3.7-22**. This represents the highest existing road density within the 2-mile corridor amongst Region I alternatives.

Game Species

The types of impacts to big game species under Alternative I-C generally would be the same as described for Alternative I-A, but would differ in the amount of habitat disturbed. **Table 3.7-23** presents a comparison of impacts to habitat in Region I. Alternative I-C would result in the construction and operation disturbance of 6,188 acres and 599 acres, respectively, of potentially suitable upland game bird, small game mammal, and furbearer habitat. These areas represent 0.12 percent and 0.01 percent of the available upland game bird, small game mammal, and furbearer habitat within the Region I wildlife analysis area. Alternative I-C also would result in the construction disturbance of 59 acres and operation disturbance of 7 acres of waterfowl habitat. These areas represent 0.07 percent and <0.01 percent of the available waterfowl habitat within the Region I wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to small game species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative I-C would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Nongame Species

The types of impacts to nongame species under Alternative I-C generally would be the same as those described for Alternative I-A, but would differ in the amount of habitat disturbed. **Table 3.7-23** presents a comparison of impacts to habitat in Region I. Alternative I-C would result in the construction and operation disturbance of 6,188 acres and 599 acres, respectively, of potentially suitable small mammal and reptile habitat. These areas represent 0.12 percent and 0.01 percent of the available small mammal and reptile habitat within the Region I wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to nongame species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative I-C would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Raptors and Other Migratory Birds

The types of impacts to raptors and other migratory birds under Alternative I-C would generally be the same as described for Alternative I-A, but would differ in the amount of habitat disturbed. Alternative I-C would result in the construction and operation disturbance of 6,188 acres and 599 acres, respectively, of potentially suitable raptor and other migratory bird breeding, roosting, and foraging habitat. These areas represent 0.12 percent and 0.01 percent of potentially suitable raptor and migratory bird breeding, roosting, and foraging habitat within the Region I wildlife analysis area. The length of Alternative I-C is found in **Table 3.7-23**. Potential impacts to raptors and other migratory birds may occur as a result of collision and electrocution; however, TWE's design feature (TWE-30) requires that the Project meet or

exceed the raptor safe design standards described in the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006). In addition, 149 raptor nests that are not classified as special status occur within 1 mile of the reference line along Alternative I-C (**Table 3.7-24**). In order to minimize impacts to raptors during the breeding season (January 1 to August 15), TWE has committed to implementing seasonal timing restrictions in applicable areas (TWE-32). While this design feature and BMPs presented in **Appendix C** would help to minimize impacts, additional mitigation is proposed. **WLF-1** would require TWE to conduct a breeding raptor survey and implement appropriate mitigation measures, such as buffer zones around occupied nests, as needed. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to raptors and other migratory birds under Alternative I-C would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities. There would be negligible potential for electrocution under Alternative I-C.

TWE has committed to developing an operational policy and a comprehensive strategy for collecting data, minimizing impacts, and mitigating loss of migratory birds and essential habitats prior to the initiation of construction. This policy and strategy will be incorporated into a single, over-arching document (Avian Protection Plan or Bird Conservation Strategy) that will include a full listing of all minimization measures included in this analysis, as well as recommendations from the USFWS and additional information included within the Avian Protection Plan Guidelines, developed by the USFWS and APLIC in 2005 (APLIC 2012).

Alternative I-D (Agency Preferred)

Alternative I-D Habitat Disturbance and Fragmentation

Alternative I-D would cross approximately 171 miles of wildlife habitat in Wyoming and Colorado. Approximately 63 miles (36 percent) of this alternative will be co-located with other existing transmission lines as shown in **Table 3.7-22**. Existing conditions within the Alternative I-D 2-mile corridor relative to wildlife can be characterized as moderately disturbed and fragmented. Alternative I-D follows the I-80 corridor for approximately 40 miles from Rawlins, Wyoming, to just south of Wamsutter, Wyoming, at which point it turns south towards the Wyoming-Colorado border. This section of Alternative I-D is highly fragmented and disturbed by the highway, several county roads, and high densities of existing oil and gas operations. The remaining segments of Alternative I-D are moderately fragmented by county roads, low density oil and gas and livestock operations, and private residences. A total of 550 miles of existing roads are located within the 2-mile corridor as shown **Table 3.7-22**. This represents the second highest existing road density within the 2-mile corridor amongst Region I alternatives.

Game Species

The types of impacts to big game species under Alternative I-D generally would be the same as described for Alternative I-A, but would differ in the amount of habitat disturbed. **Table 3.7-23** presents a comparison of impacts to habitat in Region I. Alternative I-D would result in the construction and operation disturbance of 5,644 acres and 516 acres, respectively, of potentially suitable upland game bird, small game mammal, and furbearer habitat. These areas represent 0.11 percent and <0.01 percent of the available upland game bird, small game mammal, and furbearer habitat within the Region I wildlife analysis area. Alternative I-D also would result in the construction disturbance of 120 acres and operation disturbance of 10 acres of waterfowl habitat. These areas represent 0.14 percent and 0.01 percent of the available waterfowl habitat within the Region I wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to small game species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative I-D would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Nongame Species

The types of impacts to nongame species under Alternative I-D generally would be the same as those described for Alternative I-A, but would differ in the amount of habitat disturbed. **Table 3.7-23** presents a comparison of impacts to habitat in Region I. Alternative I-D would result in the construction and operation disturbance of 5,644 acres and 516 acres, respectively, of potentially suitable small mammal and reptile habitat. These areas represent 0.11 percent and <0.01 percent of the available small mammal and reptile habitat within the Region I wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to nongame species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative I-D would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Raptors and Other Migratory Birds

The types of impacts to raptors and other migratory birds under Alternative I-D generally would be the same as described for Alternative I-A, but would differ in the amount of habitat disturbed. Alternative I-D would result in the construction and operation disturbance of 5,644 acres and 516 acres, respectively, of potentially suitable raptor and other migratory bird breeding, roosting, and foraging habitat. These areas represent 0.11 percent and <0.01 percent of potentially suitable raptor and other migratory bird breeding, roosting, and foraging habitat within the Region I wildlife analysis area. The length of Alternative I-D is found in **Table 3.7-23**. Potential impacts to raptors and other migratory birds may occur as a result of collision and electrocution; however, TWE's design feature (TWE-30) requires that the Project meet or exceed the raptor safe design standards described in the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006). In addition, 202 raptor nests that are not classified as special status occur within 1 mile of the reference line under Alternative I-D (**Table 3.7-24**). In order to minimize impacts to raptors during the breeding season (January 1 to August 15), TWE has committed to implementing seasonal timing restrictions in applicable areas (TWE-32). While this design feature and BMPs presented in **Appendix C** would help to minimize impacts, additional mitigation is proposed. **WLF-1** would require TWE to conduct a breeding raptor survey and implement appropriate mitigation measures, such as buffer zones around occupied nests, as needed. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to raptors and other migratory birds would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities. There would be negligible potential for electrocution under Alternative I-D.

TWE has committed to developing an operational policy and a comprehensive strategy for collecting data, minimizing impacts, and mitigating loss of migratory birds and essential habitats prior to the initiation of construction. This policy and strategy will be incorporated into a single, over-arching document (Avian Protection Plan or Bird Conservation Strategy) that will include a full listing of all minimization measures included in this analysis, as well as recommendations from the USFWS and additional information included within the Avian Protection Plan Guidelines, developed by the USFWS and APLIC in 2005 (APLIC 2012).

Tuttle Easement Micro-siting Options

TWE has developed three potential options to avoid or minimize the crossing of the Tuttle Easement and the NPS Deerlodge Road along Alternative I-D. These are referred to as Tuttle Easement micro-siting options 1, 2, and 3. CPW holds a conservation easement over portions of the Tuttle Ranch, located east of the town of Elk Springs in Moffat County, Colorado. The Tuttle Ranch supports an important white-tailed prairie dog colony, which is suitable habitat for the black-footed ferret. It is intended that future black-footed ferret reintroductions will occur within this conservation easement.

The differences in the potential impacts to local wildlife populations resulting from these micro-siting options when compared to Alternative I-D are anticipated to be minor in terms of the number of acres of habitat directly impacted. The substantive difference between the micro-siting options and Alternative I-D involves the level of habitat fragmentation resulting from construction. Although micro-siting option 1 would cross the conservation easement and areas of active white-tailed prairie dog colonies similar to Alternative I-D, Option 1 would be located immediately adjacent to an existing 345-kV transmission line therefore reducing the amount of habitat fragmentation resulting from construction in comparison to Alternative I-D. Micro-siting options 2 and 3 would differ from Alternative I-D by not crossing the conservation easement and active white-tailed prairie dog colonies but would result in increased habitat fragmentation as construction would be located in an area with no existing overhead transmission lines.

Region I Conclusion

Based on a comparison of impact parameters for Region I alternatives, potential construction and operation impacts to wildlife would be greatest for Alternative I-C as shown in **Table 3.7-23**. Potential effects for Alternatives I-A, I-B, and I-D would be relatively low compared to those of Alternative I-C. Alternative I-C would result in the greatest direct and indirect impacts to big game habitat, small game habitat, and migratory bird habitat in comparison to the other Region I alternatives. Alternative I-C also would result in the greatest impacts to existing raptor nests and BHCAs in comparison to the other Region I alternatives (**Table 3.7-23**). Alternative I-C also could result in the highest potential construction disturbance to riparian areas near perennial streams as discussed in Section 3.9, Aquatic Biological Resources, and displayed in **Table 3.9-8**. Even though the greatest level of impacts are associated with Alternative I-C, project effects on wildlife species and their habitat would be avoided or considered to be low magnitude and short-term in duration after applying BMPs, design features, and additional mitigation (Sections 3.7.6.2 and 3.7.6.3 and **Appendix C**).

Alternative Connectors in Region I

Both the Mexican Flats Alternative Connector and the Baggs Alternative Connector would include minimal increases of total habitat disturbance relative to the total impacts associated with Region I alternatives if they were to be utilized. Both Alternative Connectors would cross pronghorn and mule deer crucial winter range. **Table 3.7-25** summarizes impacts associated with the alternative connectors in Region I.

Table 3.7-25 Summary of Region I Alternative Connector Impact Parameters for Wildlife

Alternative Connector	Impact Parameters
Mexican Flats Alternative Connector	Big Game Species • Approximately 48 acres of construction, 9 acres of operation, and 3,123 acres of indirect impacts to pronghorn crucial winter/yearlong range would occur. • Approximately 4 acres of construction, 1 acre of operation, and 82 acres of indirect impacts to mule deer crucial winter/yearlong range would occur. • Approximately 10 acres of construction, 2 acres of operation, and 617 acres of indirect impacts to mule deer crucial winter range would occur. Small Game and Nongame Species • Approximately 10 miles in length.[1] • An additional 322 acres of construction, 25 acres of operation and 9,018 acres of indirect impacts to small game and nongame potential habitat would occur. Approximately 4 acres of construction, 0 acres of operation, and 302 acres of indirect impacts to waterfowl potential habitat would occur. • Three non-special status raptor nests are within 1 mile of the reference line. These nests, for which the species is not known, potentially could be utilized by special status raptor species.

Table 3.7-25 Summary of Region I Alternative Connector Impact Parameters for Wildlife

Alternative Connector	Impact Parameters
	• Muddy Creek Wetlands IBA is crossed by the 2-mile transmission line corridor for a total of 1,513 acres.
Baggs Alternative Connector	Big Game Species • Approximately 225 acres of construction, 52 acres of operation, and 18,595 acres of indirect impacts to pronghorn crucial winter/yearlong range would occur. • Approximately 290 acres of construction, 69 acres of operation, and 24,457 acres of indirect impacts to mule deer crucial winter/yearlong range would occur.
	Small Game and Nongame Species • Approximately 22 miles in length.[1] • Approximately 737 acres of construction, 68 acres of operation, and 24,777 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately 7 acres of construction and 1 acre of operation and 505 acres of indirect impacts to waterfowl potential habitat would occur. • Forty non-special status raptor nests are within 1 mile of the reference line. Thirty-one of these nests, for which the species is not known, potentially could be utilized by special status raptor species. IBAs • Powder Rim IBA is crossed by the 2-mile transmission line corridor for a total of 4,950 acres. BHCAs • Powder Rim BHCA is crossed by the 2-mile transmission line corridor for a total of 169 acres.
Fivemile Point North Alternative Connector	Big Game Species • Approximately 9 acres of construction, 1 acre of operation, and 121 acres of indirect impacts to pronghorn crucial winter/yearlong range would occur. • Approximately 82 acres of construction, 8 acres of operation, and 2,637 acres of indirect impacts to mule deer crucial winter/yearlong range would occur. Small Game and Nongame Species • Approximately 3 miles in length.[1] • Approximately 85 acres of construction, 7 acres of operation, and 2,546 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately 1 acre of construction, 0.1 acres of operation, and 20 acres of indirect impacts to waterfowl potential habitat would occur. • Nineteen non-special status raptor nests are within 1 mile of the reference line. Six of these nests for which the species is not known potentially could be utilized by special status raptor species.
Fivemile Point South Alternative Connector	Big Game Species • Approximately 31 acres of construction, 6 acres of operation, and 1,497 acres of indirect impacts to mule deer crucial winter/yearlong range would occur. Small Game and Nongame Species • Approximately 2 miles in length.[1] • Approximately 73 acres of construction, 6 acres of operation, and 1,485 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately 0 acres of construction, 0 acres of operation, and 23 acres of indirect impacts to waterfowl potential habitat would occur. • One non-special status raptor nest is within 1 mile of the reference line. This nest, for which the species is not known, potentially could be utilized by special status raptor species.

[1] Note: Length refers to length of 600 kV transmission lines, and serves as a proxy metric for avian collision potential.

Alternative Ground Electrode Systems in Region I

The northern ground electrode system would be necessary within 100 miles of the Northern Terminal, as discussed in Section 2.5.1, Alternative Transmission Line Routes and Ancillary Facilities by Region. Although the location for this system has not been determined, conceptual locations and connections to the alternative routes have been provided by the proponent. The types of impacts associated with constructing and operating this system will be similar to those discussed under Alternative I-A but will be significantly reduced in scope and intensity. The ground electrode systems are detailed in Section 2.4.3, Facilities Common to All Action Alternatives. Direct impacts to wildlife habitat will include those resulting from construction of the ground electrode site and access roads. Indirect impacts to wildlife will include disturbance from operation activities and habitat fragmentation resulting from access road construction and the operation of the low voltage overhead line. The ground electrode overhead line will be similar to a modified 345-kV/69-kV distribution transmission line as discussed in Section 2.4.3, and will meet or exceed the raptor safe design standards described in the *Suggested Practices for Avian Protection on Power Lines : The State of the Art in 2006* (APLIC 2006). **Table 3.7-26** summarizes impacts associated with the seven combinations of alternative route and location possibilities for the northern ground electrode system. **Table 3.7-27** presents known raptor nests within 1 mile of the ground electrode system locations.

Table 3.7-26 Summary of Region I Alternative Ground Electrode System Location Impact Parameters for Wildlife[1]

Alternative Ground Electrode System Locations	Analysis
Separation Flat – All Alternative Routes	• Approximately 13 miles in length.[2] • Approximately 351 acres of indirect impacts to pronghorn crucial winter/yearlong range would occur. • Approximately 63 acres of construction, 19 acres of operation, and 13,232 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately 4 acres of construction, 1 acre of operation, and 579 acres of indirect impacts to waterfowl potential habitat would occur. • Approximately 1,307 acres of indirect impacts to the Shamrock Hills Raptor Area BHCA would occur. • Approximately 1,308 acres of indirect impacts to the Shamrock Hills Raptor Concentration Area IBA would occur.
Shell Creek (Alternatives I-A and I-D)	• Approximately 33 miles in length.[2] • Approximately 12 acres of indirect impacts to mule deer crucial winter/yearlong range would occur. • Approximately 220 acres of construction, 88 acres of operation, and 13,294 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately 6 acres of construction, 2 acres of operation, and 290 acres of indirect impacts to waterfowl potential habitat would occur.
Little Snake East (Alternatives I-A, I-B, and I-D)	• Approximately 9 miles in length.[2] • Approximately 19 acres of construction, 5 acres of operation, and 2,942 acres of indirect impacts to pronghorn severe winter range would occur. • Approximately16 acres of construction, 4 acres of operation, and 1,079 acres of indirect impacts to mule deer severe winter range would occur. • Approximately 2 acres of construction, 1 acre of operation, and 1,529 acres of indirect impacts to elk severe winter range would occur. • Approximately 107 acres of construction, 29 acres of operation, and 13,327 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately 156 acres of indirect impacts to waterfowl potential habitat would occur. • The Routt and Moffat County Uplands BHCA is crossed by this ground electrode and associated facilities for a total of 9,102 acres. • Approximately 13,597 acres of indirect impacts to the Routt and Moffat County Uplands BHCA would occur.

Table 3.7-26 Summary of Region I Alternative Ground Electrode System Location Impact Parameters for Wildlife[1]

Alternative Ground Electrode System Locations	Analysis
Little Snake West (Alternative I-A)	• Approximately 10 miles in length.[2] • Approximately 7 acres of construction, 2 acres of operation, and 2,105 acres of indirect impacts to elk severe winter range would occur. • Approximately 79 acres of construction, 24 acres of operation, and 5,626 acres of indirect impacts to pronghorn severe winter range would occur. • Approximately 1,455 acres of indirect impacts to mule deer severe winter range would occur. • Approximately 121 acres of construction, 37 acres of operation, and 13,202 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately 308 acres of indirect impacts to waterfowl potential habitat would occur. • The Routt and Moffat County Uplands BHCA is crossed by this ground electrode and associated facilities for a total of 4,797 acres. • Approximately 13,599 acres of indirect impacts to the Routt and Moffat County Uplands BHCA would occur.
Shell Creek (Alternative I-B)	• Approximately 26 miles in length.[2] • Approximately 12 acres of indirect impacts to mule deer crucial winter/yearlong range would occur. • Approximately 213 acres of construction, 76 acres of operation, and 13,294 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately 6 acres of construction, 2 acres of operation, and 290 acres of indirect impacts to waterfowl habitat would occur.
Little Snake West (Alternative I-B and I-D)	• Approximately 5 miles in length.[2] • Approximately 6 acres of construction, 1 acre of operation, and 2,105 acres of indirect impacts to elk severe winter range would occur. • Approximately 60 acres of construction, 13 acres of operation, and 5,626 acres of indirect impacts to pronghorn severe winter range would occur. • Approximately 1,455 acres of indirect impacts to mule deer severe winter range would occur. • Approximately 92 acres of construction, 21 acres of operation, and 13,202 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately 308 acres of indirect impacts to waterfowl potential habitat would occur. • Approximately 13,599 acres of indirect impacts to the Routt and Moffat County Uplands BHCA would occur.
Eight Mile Basin	• Approximately 4 miles in length.[2] • Approximately 66 acres of indirect impacts to mule deer crucial winter/yearlong range would occur. • Approximately 12,538 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately 170 acres of indirect impacts to waterfowl potential habitat would occur.
Separation Creek	• Approximately 14 miles in length.[2] • Approximately 102 acres of construction, 36 acres of operation, and 4,343 acres of indirect impacts to pronghorn crucial winter/yearlong range would occur. • Approximately 34 acres of construction, 12 acres of operation, and 1,880 acres of indirect impacts to mule deer crucial winter/yearlong range would occur. • Approximately 13,290 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately 154 acres of indirect impacts to waterfowl potential habitat would occur.

[1] Ground electrode systems are described in detail in Section 2.5.1, Alternative Transmission Line Routes and Ancillary Facilities by Region.

[2] Length refers to length of 34.5 kV transmission lines, and serves as a proxy metric for avian collision potential.

Table 3.7-27 Non-special Status Raptor Nests Within 1 Mile of the Ground Electrode System Locations[1]

Alternative Ground Electrode System Locations	Raptor Nests[2,3,4]
Separation Flat (All Alternatives)	2 American kestrel, 1 red-tailed hawk, 3 unknown raptor species nests
Shell Creek (Alternatives I-A, I-B, I-D)	1 American kestrel, 1 unknown raptor species nest
Little Snake East (Alternatives I-A, I-B, I-D)	1 red-tailed hawk, 5 unknown raptor species nests
Little Snake West (Alternatives I-A, I-B, I-D)	27 unknown raptor species nests
Eight Mile Basin (All Alternatives)	2 red-tailed hawk nests
Separation Creek (All Alternatives)	7 American kestrel, 1 great-horned owl, 3 northern harrier, 9 red-tailed hawk, 3 unknown raptor species nests

[1] Ground electrode systems are described in detail in Section 2.5.1, Alternative Transmission Line Routes and Ancillary Facilities by Region.

[2] Special status raptor species are presented in Section 3.8, Special Status Wildlife.

[3] Raptor nests are a total of those within 1 mile of the reference line, site, and siting area. Some duplication exists due to the unknown exact locations of electrode sites and associated features.

[4] Nests of raptor species, which are classified as special status, are tabulated in Section 3.8, Special Status Wildlife Species. Nests of unknown raptor species are tabulated in both Sections 3.7 and 3.8 because they may have been utilized by either special status raptors or non-special status raptors.

3.7.6.4 Region II

As presented in **Table 3.7-28**, the Project alternatives cross five national forests. This table presents miles of NFS land crossed by alternative and associated Project components in order to provide a general understanding of potential for impacts. Additional information on potential impacts to wildlife in the national forests is provided in the Region II and Region III discussions.

Table 3.7-28 Miles of National Forest Crossed by Region, Alternative, Alternative Connector, or Alternative Variation

	Region II									Region III				
												Alternative Variation		
National Forest	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F	Emma Park Alternative Variation	Comparable Portion of Emma Park Alternative	Highway 191 Alternative Connector	Lynndyl Alternative Connector	Alternative III-A	Ox Valley East	Ox Valley West	Pinto
Uintah-Wasatch-Cache	18	0	0	0	8	10	0	2	0	0	0	0	0	0
Manti-La Sal	3	19	0	9	0	3	0	0	0	0	0	0	0	0
Ashley	0	0	0	0*	10	<1	0	<1	0	0	0	0	0	0
Fishlake	0	4	29	0	0	4	0	0	0	<1	0	0	0	0
Dixie	0	0	0	0	0	0	0	0	0	0	16	27	20	34
Total miles of forest crossed by route in region	21	23	29	9	18	17	0	2	0	<1	16	27	20	34

* While Alternative II-D alignment does not cross the Ashley National Forest, because the route so closely follows the boundary, there are potential associated impacts that are discussed in the Region II section.

Table 3.7-29 provides a tabulation of impacts to wildlife associated with the alternative routes in Region II. **Table 3.7-30** provides a tabulation of impacts to USFS MIS, which are not classified as special status, associated with the alternative routes in Region II. MIS that are classified as special status species are discussed in Section 3.8, Special Status Wildlife Species. Key impact parameters that relate to the impact discussion in Section 3.7.6.2, Impacts Common to All Alternative Routes and Associated Components, and specific differences by alternative are discussed below.

Alternative II-A (Applicant Proposed)

Alternative II-A Habitat Disturbance and Fragmentation

Alternative II-A would cross approximately 257 miles of wildlife habitat in Colorado and Utah. Approximately 225 miles (86 percent) of this alternative will be co-located with other existing transmission lines as shown in **Table 3.7-31**. Existing conditions within the Alternative II-A 2-mile corridor relative to wildlife can be characterized as moderately disturbed and fragmented. Major sources of disturbance along Alternative II-A in western Colorado and eastern Utah include several livestock operation roads, a major surface coal mining operation located within the 2-mile corridor, and the town of Dinosaur, Colorado. Wildlife habitat along the Alternative II-A in Moffat County, Colorado, also is fragmented by the existence of U.S highway 40 which parallels the 2-mile corridor to the Utah-Colorado border. Sources of disturbance in Uintah County, Utah, include oil and gas operations, livestock operations, and center pivot agriculture operations near the communities of Roosevelt and Duchesne. In Duchesne County, Utah, sources of disturbance include oil and gas operations, livestock operations, and center pivot agriculture operations, and the communities of Fort Duchesne, Roosevelt, and Fruitland. Wildlife habitat in Wasatch County, Utah, becomes less fragmented as the landscape become more forested and mountainous. In Utah County, Utah, the major source of fragmentation within the 2-mile corridor is State Highway 89 and State Highway 6 which parallel Alternative II-A for approximately 17 miles. Major sources of disturbance and fragmentation in Juab County, Utah, are center pivot operations, the town of Nephi, Utah, and the Intermountain Power Plant located north of Delta, Utah. A total of 1,256 miles of existing roads are located within the Alternative II-A 2-mile corridor as shown **Table 3.7-30**. This represents the highest existing road density within the 2-mile corridor amongst Region II alternatives.

Key Parameters Summary

Game Species

Alternative II-A would result in the direct disturbance to pronghorn, mule deer, elk, moose, and Rocky Mountain bighorn sheep crucial winter habitat (**Table 3.7-29**). Implementation of the BLM, CPW, UDWR, and USFS restriction to prevent disturbance to wintering big game species in identified crucial winter range from November 15 to April 30, would prevent direct impacts to wintering big game species. Alternative II-A would result in the construction and operation disturbance of 8,613 acres and 1,110 acres, respectively, of upland game bird, small game mammal, and furbearer habitat. These areas represent 0.08 percent and 0.01 percent of the available upland game bird, small game mammal, and furbearer habitat within the Region II wildlife analysis area. Alternative II-A also would result in the construction disturbance of 131 acres and operation disturbance of 17 acres of waterfowl habitat. These areas represent 0.05 percent and <0.01 percent of the available waterfowl habitat within the Region II wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to small game species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative II-A would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Table 3.7-29 Summary of Region II Alternative Route Impact Parameters for Wildlife

Parameter	Alternative II-A			Alternative II-B			Alternative II-C			Alternative II-D			Alternative II-E			Alternative II-F		
	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts
Big Game Species																		
Colorado pronghorn severe winter range (acres)	0	0	0	57	15	4,836	57	15	4,836	0	0	0	0	0	0	0	0	0
Percentage of existing habitat within the Region II big game analysis area	0	0	0	0.37	0.09	31.21	0.37	0.09	31.21	0	0	0	0	0	0	0	0	0
Utah pronghorn crucial yearlong range (acres)	731	219	67,961	1,217	288	102,765	1,029	249	84,160	1,275	354	111,220	768	192	73,610	1,047	284	83,693
Percentage of existing habitat within the Region II big game analysis area	0.01	<0.01	1.32	0.02	<0.01	2.00	0.02	<0.01	1.64	0.02	<0.01	2.13	0.01	<0.01	1.43	0.02	<0.01	1.62
Utah pronghorn substantial yearlong range (acres)	80	18	9,739	406	97	39,549	491	114	43,163	19	8	2,566	226	60	20,802	18	7	2,566
Percentage of existing habitat within the Region II big game analysis area	<0.01	<0.01	1.04	0.04	0.01	4.23	0.05	0.01	4.62	<0.01	<0.01	0.27	0.02	<0.01	2.22	<0.01	<0.01	0.27
Colorado mule deer severe winter range (acres)	248	63	25,313	188	48	16,000	188	48	16,000	248	63	25,390	248	63	25,390	248	63	25,390
Percentage of existing habitat within the Region II big game analysis area	0.14	0.03	14.10	0.10	0.03	8.91	0.10	0.03	8.91	0.14	0.03	14.14	0.14	0.03	14.14	0.14	0.03	14.14
Utah mule deer crucial winter range (acres)	793	299	78,508	648	227	47,244	755	206	64,596	575	202	38,237	824	318	47,908	555	219	37,270
Percentage of existing habitat within the Region II big game analysis area	0.02	<0.01	2.25	0.02	<0.01	1.35	0.02	<0.01	1.85	0.02	<0.01	1.10	0.02	<0.01	1.37	0.02	<0.01	1.07
Colorado elk severe winter range (acres)	93	22	6,425	122	32	11,295	122	32	11,295	93	22	6,425	93	22	6,425	93	22	6,425
Percentage of existing habitat within the Region II big game analysis area	0.09	0.02	6.06	0.12	0.03	10.65	0.12	0.03	10.65	0.09	0.02	6.06	0.09	0.02	6.06	0.09	0.02	6.06
Utah elk crucial winter range (acres)	1,009	386	89,504	805	251	49,473	857	241	17,548	715	257	49,536	1,472	569	72,194	844	551	53,785
Percentage of existing habitat within the Region II big game analysis area	0.03	0.01	2.69	0.02	<0.01	1.49	0.03	<0.01	0.53	0.02	<0.01	1.49	0.04	0.02	2.17	0.03	0.02	2.68
Utah moose occupied habitat (acres)	220	72	22,806	311	125	21,576	0	0	0	790	256	56,727	432	143	29,431	710	255	52,566
Percentage of existing habitat within the Region II big game analysis area	0.02	<0.01	1.73	0.02	<0.01	1.64	0	0	0	0.06	0.02	4.30	0.03	0.01	2.23	0.05	0.02	3.98
Utah Rocky Mountain bighorn sheep crucial yearlong range (acres)	14	6	2,528	2	1	761	2	1	761	151	45	11,796	3	2	694	147	41	11,817
Percentage of existing habitat within the Region II big game analysis area	<0.01	<0.01	0.14	<0.01	<0.01	0.04	<0.01	<0.01	0.04	<0.01	<0.01	0.66	<0.01	<0.01	0.04	<0.01	<0.01	0.66
Utah desert bighorn sheep occupied habitat (acres)	0	0	0	23	5	1,111	26	6	2,219	0	0	0	0	0	0	0	0	0
Percentage of existing habitat within the Region II big game analysis area	0	0	0	<0.01	<0.01	0.10	<0.01	<0.01	0.20	0	0	0	0	0	0	0	0	0
Moose parturition range	0	0	0	35	16	3,073	97	28	8,612	16	5	763	67	19	4,119	47	17	2,087
Percentage of existing habitat within the Region II big game analysis area	0	0	0	<0.01	<0.01	0.78	<0.01	<0.01	2.19	<0.01	<0.01	0.19	<0.01	<0.01	1.05	<0.01	<0.01	0.53
Mule deer parturition range	306	94	30,362	297	119	21,620	191	55	34,017	599	206	43,129	474	138	33,638	727	258	18,542
Percentage of existing habitat within the Region II big game analysis area	<0.01	<0.01	0.86	<0.01	<0.01	0.62	<0.01	<0.01	12.40	<0.01	<0.01	15.72	<0.01	<0.01	12.26	<0.01	<0.01	0.53
Pronghorn parturition range	492	162	37,132	1,166	277	97,005	1,029	249	84,157	1,014	275	78,747	529	135	42,765	1,014	275	78,747
Percentage of existing habitat within the Region II big game analysis area	<0.01	<0.01	2.60	<0.0	<0.01	6.79	<0.01	<0.01	5.89	<0.01	<0.01	5.51	<0.01	<0.01	2.99	<0.01	<0.01	5.51
Rocky Mountain elk parturition range	44	15	4,707	<1	<1	4,740	<1	<1	5,607	88	25	7,738	0	0	0	88	25	7,738
Percentage of existing habitat within the Region II big game analysis area	<0.01	<0.01	0.29	<0.01	<0.01	0.29	<0.01	<0.01	0.35	<0.01	<0.01	0.48	0	0	0	<0.01	<0.01	0.48
Small Game and Nongame Species																		
Upland game bird, small game mammal, furbearer, small nongame mammal, migratory bird, and reptile habitat (acres)[1]	8,613	1,110	329,494	11,436	1,350	415,597	12,093	1,252	446,512	8,876	1,166	319,535	8,846	1,125	318,382	9,169	1,327	311,279
Percentage of existing habitat within Region II wildlife analysis area	0.08	0.01	3.11	0.11	0.01	3.92	0.11	0.01	4.21	0.08	0.01	3.01	0.08	0.01	3.00	0.09	0.01	2.94
Waterfowl habitat (acres)[2]	131	17	7,415	94	11	5,183	96	12	6,050	64	9	3,843	157	18	6,985	54	10	3,044
Percentage of existing habitat within Region II wildlife analysis area	0.05	<0.01	2.93	0.04	<0.01	2.05	0.04	<0.01	2.39	0.03	<0.01	1.52	0.06	<0.01	2.76	0.02	<0.01	1.20
Relative Collision Potential for Migratory Birds																		
Length of transmission line (miles)[4]	257			345			364			262			266			267		
Raptor Nests (Non-special Status)																		
Number within 1 mile of the reference line[3]	99			107			99			139			101			117		
Bird Habitat Conservation Areas																		
BHCAs crossed by the 250-foot-wide transmission line ROW (acres)	761			4,569			4,256			59			534			0		

Table 3.7-29 Summary of Region II Alternative Route Impact Parameters for Wildlife

Parameter	Alternative II-A			Alternative II-B			Alternative II-C			Alternative II-D			Alternative II-E			Alternative II-F		
	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts
Percentage of existing BHCA habitat within the Region II wildlife analysis area	0.04			0.23			0.22			<0.01			0.03			0		
Audubon Important Bird Areas																		
Upper Strawberry Watershed IBA crossed by the 2-mile transmission line corridor (acres)	1,399			0			0			0			0			0		
Percentage of IBA within the Region II wildlife analysis area (acres)	0.90			0			0			0			0			0		

[1] Habitat categories used to calculate acreages of habitat disturbance include agricultural land, aspen forest and woodland, barren/sparsely vegetated, cliff and canyon, desert shrub, dunes, grassland, greasewood flat, herbaceous wetland, montane grassland, montane shrubland, open water, other conifer forest, other deciduous forest, pinyon-juniper, riparian, saltbush shrubland, sagebrush shrubland, tundra, and woody riparian and wetlands. Further discussion of these habitat types is included in Section 3.5.6, Impacts to Vegetation.

[2] Habitat categories used to calculate acreages of waterfowl habitat disturbance include open water, herbaceous wetland, riparian, and woody riparian and wetlands. Further discussion of these habitat types is included in Section 3.5.6, Impacts to Vegetation.

[3] Special status raptor species are addressed in Section 3.8, Special Status Wildlife Species. A total of 180 raptor nests of unknown species are documented in Region II. These nests potentially could be utilized by special status raptor species, thus also are tabulated in Section 3.8.5.4, Region II.

[4] Length refers to length of 600-kV transmission line and serves as a proxy metric for avian collision potential.

Table 3.7-30 Summary of Region II Alternative Route Impact Parameters for USFS Management Indicator Species

Parameter	Alternative II-A			Alternative II-B			Alternative II-C			Alternative II-D			Alternative II-E			Alternative II-F		
Species[1]	Construction	Operation	Indirect	Construction	Operation	Indirect	Construction	Operation	Indirect	Construction	Operation	Indirect	Construction	Operation	Indirect	Construction	Operation	Indirect
Ashley National Forest Management Indicator Species Not Otherwise Analyzed as Special Status Species																		
White-tailed ptarmigan Habitat category: 20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Percentage of existing habitat within the Region II MIS Analysis Area	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Warbling vireo Habitat categories: 2, 16, 21	0	0	0	0	0	0	0	0	0	5	2	769	93	16	6,531	13	4	966
Percentage of existing habitat within the Region II MIS Analysis Area	0	0	0	0	0	0	0	0	0	<0.01	<0.01	0.35	0.04	<0.01	2.95	0.01	<0.01	0.44
Song sparrow Habitat categories: 1, 2, 5, 6, 10, 11, 12, 13, 14, 16, 17, 18, 19, 21	0	0	0	0	0	0	0	0	0	23	9	3,785	302	37	13,126	65	20	4,989
Percentage of existing habitat within the Region II MIS Analysis Area	0	0	0	0	0	0	0	0	0	<0.01	<0.01	0.40	0.03	<0.01	1.38	0.01	<0.01	0.52
Lincoln's sparrow Habitat categories: 2, 12, 16, 19, 21	0	0	0	0	0	0	0	0	0	5	2	795	98	16	6,626	13	4	992
Percentage of existing habitat within the Region II MIS Analysis Area	0	0	0	0	0	0	0	0	0	<0.01	<0.01	0.30	0.04	0.01	2.50	0.01	<0.01	0.37
Fishlake National Forest Management Indicator Species Not Otherwise Analyzed as Special Status Species																		
Song sparrow Habitat categories: 1, 2, 5, 6, 10, 11, 12, 13, 14, 16, 17, 18, 19, 21	<1	<1	<1	132	16	4,032	989	115	39,973	0	0	0	0	0	0	132	16	4,032
Percentage of existing habitat within the Region II MIS Analysis Area	<0.01	<0.01	<0.01	<0.01	<0.01	0.30	0.07	<0.01	2.86	0	0	0	0	0	0	<0.01	<0.01	0.32
Hairy woodpecker Habitat categories: 1, 2, 6, 16, 21	<1	<1	<1	94	10	2,255	526	62	20,949	0	0	0	0	0	0	94	10	2,255
Percentage of existing habitat within the Region II MIS Analysis Area	<0.01	<0.01	<0.01	0.01	<0.01	0.36	0.08	<0.01	3.31	0	0	0	0	0	0	0.01	<0.01	0.36
Western bluebird Habitat categories: 1, 2, 5, 6, 10, 13, 16, 19, 21	<1	<1	<1	111	13	3,254	593	69	22,989	0	0	0	0	0	0	111	13	3,254
Percentage of existing habitat within the Region II MIS Analysis Area	<0.01	<0.01	<0.01	0.01	<0.01	0.37	0.07	<0.01	2.63	0	0	0	0	0	0	0.01	<0.01	0.37
Mountain bluebird Habitat categories: 1, 2, 5, 6, 10, 13, 16, 19, 21	<1	<1	<1	111	13	3,254	593	69	22,989	0	0	0	0	0	0	111	13	3,254
Percentage of existing habitat within the Region II MIS Analysis Area	<0.01	<0.01	<0.01	0.01	<0.01	0.37	0.07	<0.01	2.63	0	0	0	0	0	0	0.01	<0.01	0.37
Yellow warbler Habitat categories: 2, 16, 19, 21	<1	<1	<1	94	10	2,261	529	62	20,956	0	0	0	0	0	0	94	10	2,261
Percentage of existing habitat within the Region II MIS Analysis Area	<0.01	<0.01	<0.01	0.01	<0.01	0.36	0.08	<0.01	3.30	0	0	0	0	0	0	0.01	<0.01	0.36
MacGillivray's warbler Habitat categories: 2, 6, 16, 19, 21	<1	<1	<1	94	10	2,261	529	62	20,956	0	0	0	0	0	0	94	10	2,261
Percentage of existing habitat within the Region II MIS Analysis Area	<0.01	<0.01	<0.01	0.01	<0.01	0.35	0.08	<0.01	3.30	0	0	0	0	0	0	0.01	<0.01	0.35
Brewer's sparrow Habitat category: 18	<1	<1	<1	19	3	769	218	23	7,022	0	0	0	0	0	0	19	3	769
Percentage of existing habitat within the Region II MIS Analysis Area	<0.01	<0.01	<0.01	<0.01	<0.01	0.28	0.08	<0.01	2.59	0	0	0	0	0	0	<0.01	<0.01	0.28
Lincoln's sparrow Habitat Categories: 2, 12, 16, 19, 21	<1	<1	<1	94	10	2,261	529	62	20,956	0	0	0	0	0	0	94	10	2,261
Percentage of existing habitat within the Region II MIS Analysis Area	<0.01	<0.01	<0.01	0.01	<0.01	0.35	0.08	<0.01	3.28	0	0	0	0	0	0	0.01	<0.01	0.35

Table 3.7-30 Summary of Region II Alternative Route Impact Parameters for USFS Management Indicator Species

Parameter	Alternative II-A			Alternative II-B			Alternative II-C			Alternative II-D			Alternative II-E			Alternative II-F		
Species[1]	Construction	Operation	Indirect	Construction	Operation	Indirect	Construction	Operation	Indirect	Construction	Operation	Indirect	Construction	Operation	Indirect	Construction	Operation	Indirect
Manti-LaSal National Forest Management Indicator Species Not Otherwise Analyzed as Special Status Species																		
Abert's squirrel Habitat category: 5	3	2	470	185	37	6,269	0	0	0	66	13	2,590	3	2	537	3	2	537
Percentage of existing habitat within the Region II MIS Analysis Area	<0.01	<0.01	0.16	0.06	0.01	2.16	0	0	0	0.02	<0.01	0.89	<0.01	<0.01	0.19	<0.01	<0.01	0.19
Uintah-Wasatch-Cache National Forest Management Indicator Species Not Otherwise Analyzed as Special Status Species																		
American beaver Habitat categories: 15, 21	1	<1	3	<1	<1	31	0	0	0	<1	<1	24	1	<1	3	1	<1	3
Percentage of existing habitat within the Region II MIS Analysis Area	0.01	<0.01	0.04	<0.01	<0.01	0.37	0	0	0	<0.01	<0.01	0.29	<0.01	<0.01	0.04	<0.01	<0.01	0.04

[1] MIS that are classified as special status species are presented in Section 3.8, Special Status Wildlife Species.

Note: Please refer to Section 3.8.5.4 for indirect impacts by vegetation community/habitat category.

Table 3.7-31 Summary of Existing Conditions by Alternative within Region II

Alternative	Length (miles)	Length of Greenfield Construction	Length of Co-located Construction	Miles of Roads within 2-Mile Corridor	Miles of Roads within 2-Mile Corridor/Mile of Alternative
II-A	257	32	225	1,256	4.89
II-B	345	156	189	1,364	3.95
II-C	364	157	208	1,645	4.52
II-D	262	151	110	946	3.61
II-E	266	45	222	1,289	4.85
II-F	267	121	146	1,084	4.06

Nongame Species

The types of impacts to nongame species under Alternative II-A generally would be the same as those described for Alternative I-A, but would differ in the amount of habitat disturbed. **Table 3.7-29** presents a comparison of impacts to habitat in Region II. Alternative II-A would result in the construction and operation disturbance of 8,613 acres and 1,110 acres, respectively, of potentially suitable small mammal and reptile habitat. These areas represent 0.08 percent and 0.01 percent of the available small mammal and reptile habitat within the Region II wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to nongame species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative II-A would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Raptors and Other Migratory Birds

The types of impacts to raptors and other migratory birds under Alternative II-A generally would be the same as described for Alternative I-A, but would differ in the amount of habitat disturbed. Alternative II-A would result in the construction and operation disturbance of 8,613 acres and 1,110 acres, respectively, of potentially suitable raptor and other migratory bird breeding, roosting, and foraging habitat. These areas represent 0.08 percent and 0.01 percent of potentially suitable raptor and other migratory bird breeding, roosting, and foraging habitat within the Region II wildlife analysis area. The length of Alternative II-A is found in **Tables 3.7-29** and **3.7-31**. Potential impacts to raptors and other migratory birds may occur as a result of collision and electrocution; however, TWE's design feature (TWE-30) requires that the Project meet or exceed the raptor safe design standards described in the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006). In addition, 99 raptor nests that are not classified as special status have been identified within 1 mile of the reference line along Alternative II-A (**Table 3.7-32**). In order to minimize impacts to raptors during the breeding season (January 1 to August 15), TWE has committed to implementing seasonal timing restrictions in applicable areas (TWE-32). While this design feature and BMPs presented in **Appendix C** would help to minimize impacts, additional mitigation is proposed. **WLF-1** would require TWE to conduct a breeding raptor survey and implement appropriate mitigation measures, such as buffer zones around occupied nests, as needed. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to raptors and other migratory birds under Alternative II-A would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities. There would be negligible potential for electrocution under Alternative II-A.

Table 3.7-32 Non-special Status Raptor Nests Within 1 Mile of the Reference Line in Region II

Species	Alternative II-A (Applicant Proposed)	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F (Agency Preferred)	Castle Dale Alternative Connector	Price Alternative Connector	Lynndyl Alternative Connector	IPP East Alternative connector	Highway 191 Alternative Connector	Cedar Knoll Micro-siting Option 1	Cedar Knoll Micro-siting Option 2	Comparable Portion of Alternative II-F	Emma Park Alternative Variation	Comparable Portion of Alternative II-F	Strawberry IRA Micro-siting Option 1	Strawberry IRA Micro-siting Option 2	Strawberry IRA Micro-siting Option 3	Strawberry IRA Comparable Portion of Alternative II-A	Cedar Knoll IRA Micro-siting Option 1	Cedar Knoll IRA Micro-siting Option 2	Cedar Knoll Comparable Portion of alternative II-A
Osprey	2	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	2	0	0	0
Cooper's hawk	0	3	2	9	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Red-tailed hawk	15	9	1	28	20	15	0	6	0	0	0	1	1	1	0	0	0	0	0	0	0	0	0
American kestrel	0	0	1	4	1	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Great horned owl	1	0	2	7	2	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Common raven	1	0	2	3	0	3	0	0	0	0	0	0	0	0	0	0	1	1	1	1	0	0	0
Unknown raptor species	80	95	91	87	77	84	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Bald eagle winter roosts	6	0	0	2	6	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Totals	99	107	99	139	101	117	0	6	0	0	0	1	1	1	0	0	3	3	3	3	0	0	0

Note: Each alternative route is comprised of unique segments. Segments may be included in more than one alternative route. The total nests for each alternative route will not add to the total number of nests for the region. Bald eagle winter roosts are not included in the total.

Sources: BLM Vernal FO 2009, 2011; BLM Rawlins FO 2009, 2010; BLM Rock Springs FO 2009; BLM Cedar City FO 2010, 2012; BLM Price FO 2008; BLM Ely FO 2007; BLM Little Snake FO 2011; EPG 2012; Manti-LaSal National Forest 2012; Ashley National Forest 2010; Uintah National Forest 2011; CDOW, BLM, USFS cooperative dataset 2009; NDOW 2012; AECOM 2012.

TWE has committed to developing an operational policy and a comprehensive strategy for collecting data, minimizing impacts, and mitigating loss of migratory birds and essential habitats prior to the initiation of construction. This policy and strategy will be incorporated into a single, over-arching document (Avian Protection Plan or Bird Conservation Strategy) that will include a full listing of all minimization measures included in this analysis, as well as recommendations from the USFWS and additional information included within the Avian Protection Plan Guidelines, developed by the USFWS and APLIC in 2005 (APLIC 2012).

Strawberry IRA Micro-siting Options

TWE has developed three potential options to avoid or minimize the crossing of national forest IRAs along Alternative II-A. These are referred to as Strawberry IRA micro-siting options 1, 2, and 3. These three micro-siting options would result in similar direct impacts to wildlife habitat in comparison to Alternative II-A. Micro-siting options 2 and 3 would reduce the amount of habitat fragmentation in comparison to Alternative II-A as they would be collocated adjacent to an existing 345-kV transmission line for approximately 4 miles. Any other differences in impacts to wildlife habitat are anticipated to be negligible in comparison to Alternative II-A.

Alternative II-B

Alternative II-B Habitat Disturbance and Fragmentation

Alternative II-B would cross approximately 345 miles of wildlife habitat in Colorado and Utah. Approximately 189 miles (55 percent) of this alternative will be co-located with other existing transmission lines as shown in **Table 3.7-31**. Existing conditions within the Alternative II-B 2-mile corridor relative to wildlife can be characterized as moderately disturbed and fragmented. Major sources of disturbance along Alternative II-B in western Colorado include roads from several livestock operations and oil infrastructure located within the 2-mile corridor, and the town of Rangely, Colorado. Wildlife habitat along Alternative II-B in Rio Blanco County, Colorado, also is fragmented by the existence of State Highway 64, which parallels the 2-mile transmission line corridor for several miles east of Rangely, and State Highway 138, which crosses the corridor south of Rangely. Energy development and infrastructure fragments wildlife habitat in the Alternative II-B corridor along the rest of the route through Rio Blanco County. Existing disturbance along Alternative II-B is limited mostly to county and USFS maintenance roads in Garfield and Mesa counties, Colorado, until it reaches I-70 and follows the I-70 corridor into Utah. This section of Alternative II-B follows I-70 across all of Grand County, Utah, and is highly fragmented by the interstate, the crossing of multiple state highways and county roads, as well as the communities of Harley Dome, Thompson, and Crescent Junction. Major disturbance also is caused by the Union Pacific Railroad that weaves in and out of the 2-mile transmission line corridor for approximately 40 miles to the border of Emery County. Alternative II-B parallels U.S. Highway 6/191 north from I-70 to the border of Carbon County where the 2-mile transmission line corridor heads west. Disturbance along this stretch of Alternative II-B include I-70, U.S. Highway 6/191, the Union Pacific Railroad, Green River Municipal Airport and the community of Woodside, Utah. Pivot agriculture, oil and gas infrastructure, and State Highway 31 causes most disturbance along this portion of the route until Alternative II-B reaches the Manti-La Sal National Forest where disturbance and fragmentation is limited to USFS and county roads to the border of Sanpete County. Wildlife disturbance in Sanpete County include the towns of Mount Pleasant, and Fountain Green, Utah, and State Highways 146 and 132. The outskirts of Nephi, Utah, heavy agriculture, I-15, and State Highway 132 cause fragmentation in Juab County. The final stretch of Alternate II-B in Millard County is disturbed by State Highways 132, 125, and 174. U.S. Highway 6 and the Union Pacific Railroad also fragment the 2-mile transmission line corridor. Pivot agriculture and the Intermountain Power Plant also exist along the route where it terminates west of the town of Delta, Utah. The remaining segments of Alternative II-B are moderately fragmented by county roads, low density oil and gas and livestock operations, and private residences. A total of 1,364 miles of existing roads are located within the 2-mile transmission line corridor as shown **Table 3.7-31**. This represents the fifth highest existing road density within the 2-mile transmission line corridor amongst Region II alternatives.

Game Species

The types of impacts to big game species under Alternative II-B generally would be the same as described for Alternative I-A, but would differ in the amount of habitat disturbed. **Table 3.7-29** presents a comparison of impacts to habitat in Region II. Rocky Mountain bighorn sheep crucial winter range would not be impacted but pronghorn and desert bighorn sheep crucial winter range would be impacted under Alternative II-B. Alternative II-B would result in the construction and operation disturbance of 11,436 acres and 1,350 acres, respectively, of upland game bird, small game mammal, and furbearer habitat. These areas represent 0.11 percent and 0.01 percent of the available upland game bird, small game mammal, and furbearer habitat within the Region II wildlife analysis area. Alternative II-B also would result in the construction disturbance of 94 acres and operation disturbance of 11 acres of waterfowl habitat. These areas represent 0.04 percent and <0.01 percent of the available waterfowl habitat within the Region II wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to small game species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative II-B would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Nongame Species

The types of impacts to nongame species under Alternative II-B generally would be the same as those described for Alternative I-A, but would differ in the amount of habitat disturbed. **Table 3.7-29** presents a comparison of impacts to habitat in Region II. Alternative II-B would result in the construction and operation disturbance of 11,436 acres and 1,350 acres, respectively, of potentially suitable small mammal and reptile habitat. These areas represent 0.11 percent and 0.01 percent of the available small mammal and reptile habitat within the Region II wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to nongame species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative II-B would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Raptors and Other Migratory Birds

The types of impacts to raptors and other migratory birds under Alternative II-B generally would be the same as described for Alternative I-A, but would differ in the amount of habitat disturbed. Alternative II-B would result in the construction and operation disturbance of 11,436 acres and 1,350 acres, respectively, of potentially suitable raptor and other migratory bird breeding, roosting, and foraging habitat. These areas represent 0.11 percent and 0.01 percent of potentially suitable raptor and other migratory bird breeding, roosting, and foraging habitat within the Region II wildlife analysis area. The length of Alternative II-B is found in **Table 3.7-29**. Potential impacts to raptors and other migratory birds may occur as a result of collision and electrocution; however, TWE's design feature (TWE-30) requires that the Project meet or exceed the raptor safe design standards described in the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006). In addition, 107 raptor nests that are not classified as special status occur within 1 mile of the reference line along Alternative II-B (**Table 3.7-32**). In order to minimize impacts to raptors during the breeding season (January 1 to August 15), TWE has committed to implementing seasonal timing restrictions in applicable areas (TWE-32). While this design feature and BMPs presented in **Appendix C** would help to minimize impacts, additional mitigation is proposed. **WLF-1** would require TWE to conduct a breeding raptor survey and implement appropriate mitigation measures, such as buffer zones around occupied nests, as needed. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to raptors and other migratory birds under Alternative II-B would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities. There would be negligible potential for electrocution under Alternative II-B.

TWE has committed to developing an operational policy and a comprehensive strategy for collecting data, minimizing impacts, and mitigating loss of migratory birds and essential habitats prior to the initiation of construction. This policy and strategy will be incorporated into a single, over-arching document (Avian Protection Plan or Bird Conservation Strategy) that will include a full listing of all minimization measures included in this analysis, as well as recommendations from the USFWS and additional information included within the Avian Protection Plan Guidelines, developed by the USFWS and APLIC in 2005 (APLIC 2012).

Alternative II-C

Alternative II-C Habitat Disturbance and Fragmentation

Alternative II-C would cross approximately 364 miles of wildlife habitat in Colorado and Utah. Approximately 208 miles (57 percent) of this alternative will be co-located with other existing transmission lines as shown in **Table 3.7-31**. Existing conditions within the Alternative II-C 2-mile transmission line corridor relative to wildlife can be characterized as moderately disturbed and fragmented. Alternative II-C follows the same route as Alternative II-B (see above) until the corridor heads west near Woodside, Utah, in Emery County. Most of the existing disturbance and fragmentation in the remainder of Emery County exists around the town of Emery. Disturbance includes the town of Emery, State Highway 10, and multiple agricultural operations along the route. There also is an open pit mine within the 2-mile transmission line corridor south of Castle Dale, Utah. Disturbance and fragmentation are minimized in the mountainous regions of Sevier County consisting mainly of county and USFS roads. However, I-70 is crossed twice and part of the town of Aurora, Utah, occurs within the 2-mile transmission line corridor. Wildlife habitat along Alternative II-C is highly fragmented throughout most of Millard County beginning with the 2-mile transmission line corridor following U.S. Highway 50 to Scipio. At this point, the route tracks west and crosses the I-15 corridor, and skirts the southern boundary of the Fishlake National Forest to where it follows U.S. Highway 50 to the Delta metropolitan area. The remaining portions of the Alternative II-C corridor are moderately fragmented by county roads, low density oil and gas and livestock operations, agriculture, and private residences. A total of 1,645 miles of existing roads are located within the 2-mile transmission line corridor as shown **Table 3.7-31**. This represents the third highest existing road density within the 2-mile transmission line corridor amongst Region II alternatives.

Game Species

The types of impacts to big game species under Alternative II-C generally would be the same as those described for Alternative I-A, but would differ in the amount of habitat disturbed. **Table 3.7-29** presents a comparison of impacts to habitat in Region II. Pronghorn crucial winter range would be impacted under Alternative II-C. Alternative II-C would result in the construction and operation disturbance of 12,093 acres and 1,252 acres, respectively, of upland game bird, small game mammal, and furbearer habitat. These areas represent 0.11 percent and 0.01 percent of the available upland game bird, small game mammal, and furbearer habitat within the Region II wildlife analysis area. Alternative II-C also would result in the construction disturbance of 96 acres and operation disturbance of 12 acres of waterfowl habitat. These areas represent 0.04 percent and <0.01 percent of the available waterfowl habitat within the Region II wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to small game species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative II-C would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Nongame Species

The types of impacts to nongame species under Alternative II-C generally would be the same as those described for Alternative I-A, but would differ in the amount of habitat disturbed. **Table 3.7-29** presents a comparison of impacts to habitat in Region II. Alternative II-C would result in the construction and operation disturbance of 12,093 acres and 1,252 acres, respectively of potentially suitable small mammal

and reptile habitat. These areas represent 0.11 percent and 0.01 percent of the available small mammal and reptile habitat within the Region II wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to nongame species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative II-C would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Raptors and Other Migratory Birds

The types of impacts to raptors and other migratory birds under Alternative II-C generally would be the same as described for Alternative I-A, but would differ in the amount of habitat disturbed. Alternative II-C would result in the construction and operation disturbance of 12,093 acres and 1,252 acres, respectively, of potentially suitable raptor and other migratory bird breeding, roosting, and foraging habitat. These areas represent 0.11 percent and 0.01 percent of potentially suitable raptor and other migratory bird breeding, roosting, and foraging habitat within the Region II wildlife analysis area. The length of Alternative II-C is found in **Table 3.7-29**. Potential impacts to raptors and other migratory birds may occur as a result of collision and electrocution; however, TWE's design feature (TWE-30) requires that the Project meet or exceed the raptor safe design standards described in the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006). In addition, 99 raptor nests that are not classified as special status occur within 1 mile of the reference line along Alternative II-C (**Table 3.7-32**). In order to minimize impacts to raptors during the breeding season (January 1 to August 15), TWE has committed to implementing seasonal timing restrictions in applicable areas (TWE-32). While this design feature and BMPs presented in **Appendix C** would help to minimize impacts, additional mitigation is proposed. **WLF-1** would require TWE to conduct a breeding raptor survey and implement appropriate mitigation measures, such as buffer zones around occupied nests, as needed. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to raptors and other migratory birds under Alternative II-C would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities. There would be negligible potential for electrocution under Alternative II-C.

TWE has committed to developing an operational policy and a comprehensive strategy for collecting data, minimizing impacts, and mitigating loss of migratory birds and essential habitats prior to the initiation of construction. This policy and strategy will be incorporated into a single, over-arching document (Avian Protection Plan or Bird Conservation Strategy) that will include a full listing of all minimization measures included in this analysis, as well as recommendations from the USFWS and additional information included within the Avian Protection Plan Guidelines, developed by the USFWS and APLIC in 2005 (APLIC 2012).

Alternative II-D

Alternative II-D Habitat Disturbance and Fragmentation

Alternative II-D would cross approximately 262 miles of wildlife habitat in Colorado and Utah. Approximately 110 miles (42 percent) of this alternative will be co-located with other existing transmission lines as shown in **Table 3.7-31**. Existing conditions within the Alternative II-D 2-mile transmission line corridor relative to wildlife can be characterized as moderately disturbed and fragmented. Major sources of disturbance along Alternative II-D in western Colorado and eastern Utah include several livestock operation roads, oil and gas infrastructure located within the 2-mile transmission line corridor, and the town of Dinosaur, Colorado. Wildlife habitat along the Alternative II-D in Moffat County, Colorado, also is fragmented by the existence of U.S. Highway 40, which parallels the 2-mile transmission line corridor to the Utah-Colorado border. Sources of disturbance in Uintah County, Utah, include heavy oil and gas operations, livestock operations, and center pivot agriculture operations near the town of Jensen. In Duchesne County, Utah, sources of disturbance include oil and gas operations, livestock operations, and center pivot agriculture operations. Disturbance and fragmentation increases in western Carbon County

with an increased presence of oil and gas infrastructure, and the crossing of several major roadways (U.S. Highways 191 and 6) in this section of Alternative II-D. Major sources of disturbance and fragmentation in Juab County, Utah, are center pivot operations, the town of Nephi, Utah, and the Intermountain Power Plant located north of Delta, Utah. A total of 946 miles of existing roads are located within the 2-mile transmission line corridor as shown **Table 3.7-31**. This represents the lowest existing road density within the 2-mile transmission line corridor among Region II alternatives.

Game Species

The types of impacts to big game species under Alternative II-D generally would be the same as described for Alternative I-A, but would differ in the amount of habitat disturbed. **Table 3.7-29** presents a comparison of impacts to habitat in Region II. Pronghorn crucial winter range would be impacted under Alternative II-D. Alternative II-D would result in the construction and operation disturbance of 8,876 acres and 1,166 acres, respectively, of upland game bird, small game mammal, and furbearer habitat. These areas represent 0.08 percent and 0.01 percent of the available upland game bird, small game mammal, and furbearer habitat within the Region II wildlife analysis area. Alternative II-D also would result in the construction disturbance of 64 acres and operation disturbance of 9 acres of waterfowl habitat. These areas represent 0.03 percent and <0.01 percent of the available waterfowl habitat within the Region II wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to small game species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative II-D would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Nongame Species

The types of impacts to nongame species under Alternative II-D generally would be the same as those described for Alternative I-A, but would differ in the amount of habitat disturbed. **Table 3.7-29** presents a comparison of impacts to habitat in Region II. Alternative II-D would result in the construction and operation disturbance of 8,876 acres and 1,166 acres, respectively, of potentially suitable small mammal and reptile habitat. These areas represent 0.08 percent and 0.01 percent of the available small mammal and reptile habitat within the Region II wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to nongame species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative II-D would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Raptors and Other Migratory Birds

The types of impacts to raptors and other migratory birds under Alternative II-D generally would be the same as described for Alternative I-A, but would differ in the amount of habitat disturbed. Alternative II-D would result in the construction and operation disturbance of 8,876 acres and 1,166 acres, respectively, of potentially suitable raptor and other migratory bird breeding, roosting, and foraging habitat. These areas represent 0.08 percent and 0.01 percent of potentially suitable raptor and other migratory bird breeding, roosting, and foraging habitat within the Region II wildlife analysis area. The length of Alternative II-D is found in **Table 3.7-29**. Potential impacts to raptors and other migratory birds may occur as a result of collision and electrocution; however, TWE's design feature (TWE-30) requires that the Project meet or exceed the raptor safe design standards described in the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006). In addition, 139 raptor nests that are not classified as special status occur within 1 mile of the reference line along Alternative II-D (**Table 3.7-32**). In order to minimize impacts to raptors during the breeding season (January 1 to August 15), TWE has committed to implementing seasonal timing restrictions in applicable areas (TWE-32). While this design feature and BMPs presented in **Appendix C** would help to minimize impacts, additional mitigation is proposed. **WLF-1** would require TWE to conduct a breeding raptor survey and implement appropriate mitigation measures, such as buffer zones around occupied nests, as needed. After considering design

features and proposed mitigation measures, remaining Project construction and operation impacts to raptors and other migratory birds under Alternative II-D would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities. There would be negligible potential for electrocution under Alternative II-D.

TWE has committed to developing an operational policy and a comprehensive strategy for collecting data, minimizing impacts, and mitigating loss of migratory birds and essential habitats prior to the initiation of construction. This policy and strategy will be incorporated into a single, over-arching document (Avian Protection Plan or Bird Conservation Strategy) that will include a full listing of all minimization measures included in this analysis, as well as recommendations from the USFWS and additional information included within the Avian Protection Plan Guidelines, developed by the USFWS and APLIC in 2005 (APLIC 2012).

Alternative II-E

Alternative II-E Existing Habitat Disturbance and Fragmentation

Alternative II-E would cross approximately 266 miles of wildlife habitat in Colorado and Utah. Approximately 222 miles (83 percent) of this alternative will be co-located with other existing transmission lines as shown in **Table 3.7-31**. Existing conditions within the Alternative II-E 2-mile corridor relative to wildlife can be characterized as moderately disturbed and fragmented. Major sources of disturbance along Alternative II-E in western Colorado and eastern Utah include several livestock operations, a major surface coal mining operation located within the 2-mile transmission line corridor, and the town of Dinosaur, Colorado. Wildlife habitat along the Alternative II-E in Moffat County, Colorado, also is fragmented by the existence of U.S. Highway 40, which parallels the 2-mile corridor to the Utah-Colorado border. Sources of disturbance in Uintah County, Utah, include oil and gas operations, livestock operations, and center pivot agriculture operations near the town of Jensen. In Duchesne County, Utah, sources of disturbance include the crossing of U.S. Highway 40, oil and gas operations, livestock operations, and center pivot agriculture operations, and the communities of Bridgeland, Ioca, and Roosevelt. In Utah County, Utah, the major source of fragmentation within the 2-mile transmission line corridor is State Highway 89 and U.S. Highway 6, which parallel Alternative II-E for approximately 17 miles. Major sources of disturbance and fragmentation in Juab County, Utah, are center pivot operations, the town of Nephi, and the Intermountain Power Plant located north of Delta, Utah. A total of 1,289 miles of existing roads are located within the 2-mile transmission line corridor as shown **Table 3.7-31**. This represents the second highest existing road density within the 2-mile transmission line corridor among Region II alternatives.

Game Species

The types of impacts to big game species under Alternative II-E generally would be the same as described for Alternative I-A, but would differ in the amount of habitat disturbed. **Table 3.7-29** presents a comparison of impacts to habitat in Region II. Pronghorn crucial winter range would be impacted under Alternative II-E. Alternative II-E would result in the construction and operation disturbance of 8,846 acres and 1,125 acres, respectively, of upland game bird, small game mammal, and furbearer habitat. These areas represent 0.08 percent and 0.01 percent of the available upland game bird, small game mammal, and furbearer habitat within the Region II wildlife analysis area. Alternative II-E also would result in the construction disturbance of 157 acres and operation disturbance of 18 acres of waterfowl habitat. These areas represent 0.06 percent and <0.01 percent of the available waterfowl habitat within the Region II wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to small game species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative II-D would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Nongame Species

The types of impacts to nongame species under Alternative II-E generally would be same as those described for Alternative I-A, but would differ in the amount of habitat disturbed. **Table 3.7-29** presents a comparison of impacts to habitat in Region II. Alternative II-E would result in the construction and operation disturbance of 8,846 acres and 1,125 acres, respectively, of potentially suitable small mammal and reptile habitat. These areas represent 0.08 percent and 0.01 percent of the available small mammal and reptile habitat within the Region II wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to nongame species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative II-E would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Raptors and Other Migratory Birds

The types of impacts to raptors and other migratory birds under Alternative II-E generally would be the same as described for Alternative I-A, but would differ in the amount of habitat disturbed. Alternative II-E would result in the construction and operation disturbance of 8,846 acres and 1,125 acres, respectively, of potentially suitable raptor and other migratory bird breeding, roosting, and foraging habitat. These areas represent 0.08 percent and 0.01 percent of potentially suitable raptor and other migratory bird breeding, roosting, and foraging habitat within the Region II wildlife analysis area. The length of Alternative II-E is found in **Table 3.7-29**. Potential impacts to raptors and other migratory birds may occur as a result of collision and electrocution; however, TWE's design feature (TWE-30) requires that the Project meet or exceed the raptor safe design standards described in the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006). In addition, 101 raptor nests that are not classified as special status occur within 1 mile of the reference line along Alternative II-E (**Table 3.7-32**). In order to minimize impacts to raptors during the breeding season (January 1 to August 15), TWE has committed to implementing seasonal timing restrictions in applicable areas (TWE-32). While this design feature and BMPs presented in **Appendix C** would help to minimize impacts, additional mitigation is proposed. **WLF-1** would require TWE to conduct a breeding raptor survey and implement appropriate mitigation measures, such as buffer zones around occupied nests, as needed. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to raptors and other migratory birds under Alternative II-E would be limited to habitat loss, fragmentation, mortality from collisions, negligible potential for electrocution, and disturbance during routine maintenance activities.

TWE has committed to developing an operational policy and a comprehensive strategy for collecting data, minimizing impacts, and mitigating loss of migratory birds and essential habitats prior to the initiation of construction. This policy and strategy will be incorporated into a single, over-arching document (Avian Protection Plan or Bird Conservation Strategy) that will include a full listing of all minimization measures included in this analysis, as well as recommendations from the USFWS and additional information included within the Avian Protection Plan Guidelines, developed by the USFWS and APLIC in 2005 (APLIC 2012).

Alternative II-F (Agency Preferred)

Alternative II-F Habitat Disturbance and Fragmentation

Alternative II-F would cross approximately 267 miles of wildlife habitat in Colorado and Utah. Approximately 146 miles (55 percent) of this alternative will be co-located with other existing transmission lines as shown in **Table 3.7-31**. Existing conditions within the Alternative II-F 2-mile transmission line corridor relative to wildlife can be characterized as moderately disturbed and fragmented. Major sources of disturbance along Alternative II-F in western Colorado and eastern Utah include several livestock operations, oil and gas infrastructure located within the 2-mile transmission line corridor, and the town of Dinosaur, Colorado. Wildlife habitat along the Alternative II-F in Moffat County, Colorado, also is

fragmented by the existence of U.S. Highway 40, which parallels the 2-mile transmission line corridor to the Utah-Colorado border. Sources of disturbance in Uintah County, Utah, include heavy oil and gas operations, livestock operations, and center pivot agriculture operations near the town of Roosevelt. In Duchesne County, Utah, sources of disturbance also include oil and gas operations, livestock operations, and center pivot agriculture operations. In Utah County, Utah, the major source of fragmentation within the 2-mile transmission line corridor is State Highway 89 and U.S. Highway 6, which parallel Alternative II-F for approximately 17 miles. Major sources of disturbance and fragmentation in Juab County, Utah, are center pivot operations, the town of Nephi, Utah, and the Intermountain Power Plant located north of Delta, Utah. The remaining segments of Alternative II-F are moderately fragmented by county roads, low density oil and gas and livestock operations, and private residences. A total of 1,084 miles of existing roads are located within the 2-mile transmission line corridor as shown **Table 3.7-31**. This represents the fourth highest existing road density within the 2-mile transmission line corridor among Region II alternatives.

Game Species

The types of impacts to big game species under Alternative II-F generally would be the same as described for Alternative I-A, but would differ in the amount of potential habitat disturbed. **Table 3.7-29** presents a comparison of impacts to habitat in Region II. Sensitive big game habitats that would be impacted under Alternative II-F include mule deer crucial winter range, elk severe winter range, pronghorn year-long and seasonal crucial range, and Rocky mountain bighorn sheep year-long crucial range. Alternative II-F would result in the construction and operation disturbance of 9,169 acres and 1,327 acres, respectively, of upland game bird, small game mammal, and furbearer potential habitat. These areas represent 0.09 percent and 0.01 percent of the available upland game bird, small game mammal, and furbearer potential habitat within the Region II wildlife analysis area. Alternative II-F also would result in the construction disturbance of 54 acres and operation disturbance of 10 acres of waterfowl habitat. These areas represent 0.02 percent and <0.01 percent of the available waterfowl habitat within the Region II wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to small game species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative II-F would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Nongame Species

The types of impacts to nongame species under Alternative II-F generally would be the same as those described for Alternative I-A, but would differ in the amount of potential habitat disturbed. **Table 3.7-29** presents a comparison of impacts to habitat in Region II. Alternative II-F would result in the construction and operation disturbance of 9,169 acres and 1,327 acres, respectively, of potential small mammal and reptile habitat. These areas represent 0.09 percent and 0.01 percent of the potential small mammal and reptile habitat within the Region II wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to nongame species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Raptors and Other Migratory Birds

The types of impacts to raptors and other migratory birds under Alternative II-F generally would be the same as described for Alternative I-A, but would differ in the amount of habitat disturbed. Alternative II-F would result in the construction and operation disturbance of 9,169 acres and 1,327 acres, respectively, of potentially suitable raptor and other migratory bird breeding, roosting, and foraging habitat. These areas represent 0.09 percent and 0.01 percent of potentially suitable raptor and other migratory bird breeding, roosting, and foraging habitat within the Region II wildlife analysis area. The length of Alternative II-F is found in **Table 3.7-29**. Potential impacts to raptors and other migratory birds may occur as a result of collision and electrocution; however, TWE's design feature (TWE-30) requires that the Project meet or

exceed the raptor safe design standards described in the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006). In addition, 117 raptor nests that are not classified as special status occur within 1 mile of the reference line along Alternative II-F (**Table 3.7-32**). In order to minimize impacts to raptors during the breeding season (January 1 to August 15), TWE has committed to implementing seasonal timing restrictions in applicable areas (TWE-32). While this design feature and BMPs presented in **Appendix C** would help to minimize impacts, additional mitigation is proposed. **WLF-1** would require TWE to conduct a breeding raptor survey and implement appropriate mitigation measures, such as buffer zones around occupied nests, as needed. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to raptors and migratory birds along Alternative II-F would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities. There would be negligible potential for electrocution under Alternative II-F.

TWE has committed to developing an operational policy and a comprehensive strategy for collecting data, minimizing impacts, and mitigating loss of migratory birds and essential habitats prior to the initiation of construction. This policy and strategy will be incorporated into a single, over-arching document (Avian Protection Plan or Bird Conservation Strategy) that will include a full listing of all minimization measures included in this analysis, as well as recommendations from the USFWS and additional information included within the Avian Protection Plan Guidelines, developed by the USFWS and APLIC in 2005 (APLIC 2012).

Cedar Knoll IRA Micro-siting Options

TWE has developed two potential options to avoid or minimize the crossing of national forest IRAs along Alternatives II-E and II-F. These are referred to as Cedar Knoll micro-siting options 1, and 2. Both of these micro-siting options would result in similar acreages of direct impacts to wildlife habitat in comparison to Alternatives II-E and II-F. However, both of these micro-siting options would be collocated adjacent to an existing 345-kV transmission line while Alternatives II-E and II-F would not be collocated with existing transmission in this area. This aspect of the micro-siting options would result in reduced habitat fragmentation in comparison to Alternatives II-E and II-F. All other differences in impacts to wildlife habitat are anticipated to be negligible in comparison to Alternatives II-E and II-F.

<u>USFS Management Indicator Species</u>

Four national forests would be crossed by the Project in Region II. A total of 12 wildlife species are identified as MIS that are not otherwise classified as special status species. Impacts to these species are presented in **Table 3.7-30**.

<u>Alternative Variation in Region II</u>

Emma Park Alternative Variation

Multiple routes have been developed in the Emma Park area north of Price, Utah to avoid occupied greater sage-grouse habitat. One route is aligned east-west and is analyzed as the Emma Park Alternative Variation. This variation and the comparable portion of Alternative II-F do not cross the Fishlake or Manti-LaSal national forests. **Table 3.7-33** summarizes Region II Alternative Variation impact parameters for wildlife species.

Table 3.7-33 Summary of Region II Alternative Variation Impact Parameters for Wildlife

Impact Parameters	Emma Park Alternative Variation			Comparable Portion of Alternative II-F		
	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts
Big Game Species						
Utah mule deer crucial winter range (acres)	3	<1	83	20	6	798
Percentage of existing habitat within the Region II big game analysis area	<0.01	<0.01	<0.01	<0.01	<0.01	0.02
Utah moose occupied habitat (acres)	609	210	34,828	582	213	25,435
Percentage of existing habitat within the Region II big game analysis area	0.05	0.02	2.64	0.04	0.02	1.93
Utah elk crucial winter range (acres)	308	110	16,913	58	16	1,373
Percentage of existing habitat within the Region II big game analysis area	<0.01	<0.01	0.51	<0.01	<0.01	0.04
Utah Rocky Mountain bighorn sheep crucial yearlong range (acres)	0	0	0	<1	<1	20
Percentage of existing habitat within the Region II big game analysis area	0	0	0	<0.01	<0.01	<0.01
Small Game and Nongame Species						
Small game and nongame potential habitat (acres)[1]	1,250	215	35,632	1,182	234	27,323
Percentage of potential habitat within the Region II wildlife analysis area	0.01	<0.01	0.34	0.01	<0.01	0.26
Waterfowl						
Waterfowl potential habitat (acres)[2]	7	1	141	<1	<1	9
Percentage of potential habitat within the Region II wildlife analysis area	<0.01	<0.01	0.06	<0.01	<0.01	<0.01
Relative Collision Potential for Migratory Birds						
Length of transmission line (miles)[3]	35			32		
Raptor Nests (Non-special Status)						
Number of raptor nests within 1 mile of the reference line[4]	0			0		
Bird Habitat Conservation Areas						
BHCAs crossed by the 250 foot-wide transmission line ROW (acres)	20	5	257	0	0	0
Percentage of existing BHCA habitat within the Region II wildlife analysis area	<0.01	<0.01	<0.01	0	0	0
Audubon Important Bird Areas						
IBA (acres) within 2-mile transmission line corridor	0	0	0	0	0	0
Ashley National Forest Management Indicator Species Not Otherwise Analyzed as Special Status Species						
White-tailed ptarmigan potential habitat (acres) Habitat category[5]: 20	0	0	0	0	0	0
Percentage of existing habitat within the Region II MIS Analysis Area	0	0	0	0	0	0
Warbling Vireo potential habitat (acres) Habitat categories: 2, 16, 21	0	0	0	9	2	197

Table 3.7-33 Summary of Region II Alternative Variation Impact Parameters for Wildlife

Impact Parameters	Emma Park Alternative Variation			Comparable Portion of Alternative II-F		
	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts
Percentage of existing habitat within the Region II MIS Analysis Area	0	0	0	<0.01	<0.01	0.09
Song sparrow potential habitat (acres) Habitat categories: 1, 2, 5, 6, 10, 11, 12, 13, 14, 16, 17, 18, 19, 21	<1	<1	<1	45	12	1,204
Percentage of existing habitat within the Region II MIS Analysis Area	<0.01	<0.01	<0.01	<0.01	<0.01	0.11
Lincoln's sparrow potential habitat (acres) Habitat categories: 2, 12, 16, 19, 21	0	0	0	9	2	197
Percentage of existing habitat within the Region II MIS Analysis Area	0	0	0	<0.01	<0.01	0.07
Uintah-Wasatch-Cache National Forest management Indicator Species Not Otherwise Analyzed as Special Status Species						
American beaver potential habitat (acres) Habitat categories: 15, 21	0	0	0	<1	<1	3
Percentage of existing habitat within the Region II MIS Analysis Area	0	0	0	<0.01	<0.01	<0.01

[1] Vegetation communities/habitat categories used to calculate acreages of potential habitat disturbance include agricultural land, aspen forest and woodland, barren/sparsely vegetated, cliff and canyon, coniferous forest, deciduous forest, desert shrubland, dunes, grassland, greasewood flat, herbaceous wetland, montane grassland, montane shrubland, open water, pinyon-juniper, riparian, sagebrush shrubland, saltbush shrubland, tundra, and woody riparian and wetlands. Further discussion of these vegetation communities in included in Section 3.5.6, Impacts to Vegetation.

[2] Vegetation communities/habitat categories used to calculate acreages of disturbance to potential waterfowl habitat include herbaceous wetland, open water, riparian, and woody riparian and wetlands. Further discussion of these vegetation communities is included in Section 3.5.6, Impacts to Vegetation.

[3] Length refers to length of 600-kV transmission line and serves as a metric for avian collision potential.

[4] Special status raptor species are addressed in Section 3.8, Special Status Wildlife Species.

[5] Habitat categories refers to vegetation communities (by number) as presented in **Table 3.7-2.**

Alternative Connectors in Region II

If utilized, the Castle Dale, Price, Lynndyl, Highway 191, and IPP East alternative connectors would include minimal increases of total habitat disturbance relative to the total impacts associated with Region II alternatives.

TWE has developed alternative reference lines in the Emma Park area north of Price, Utah. The Highway 191 Alternative Connector was identified to reduce, avoid, or minimize potential impacts to greater sage-grouse.

The Lynndyl Alternative Connector would impact mule deer crucial winter range.

Table 3.7-34 summarizes impacts associated with the alternative connectors in Region II.

Table 3.7-34 Summary of Region II Alternative Connector Impact Parameters for Wildlife

Alternative Connector	Analysis
Lynndyl Alternative Connector (Alternatives II-B and II-C)	• Approximately 24 miles in length.[1] • Approximately 266 acres of construction, 63 acres of operation, and 24,932 acres of indirect impacts to mule deer crucial winter range would occur. • Approximately 793 acres of construction, 69 acres of operation, and 28,059 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately 0 acres of construction, 0 acres of operation, and 7 acres of indirect impacts to waterfowl potential habitat would occur. • Fishlake National Forest would be crossed. Potential impacts to MIS species would range from 15 acres of construction and 2 acres of operation to song sparrow to 2 acres of construction and <1 acre of operation to Brewer's sparrow. • There are 688 acres of the Sevier Bridge/Chicken Creek BHCA within the 250 foot-wide transmission line ROW. • No raptor nests are within 1 mile of the reference line.
IPP East Alternative Connector (Alternatives II-A and II-B)	• Approximately 3 miles in length.[1] • Approximately 35 acres of construction impacts and 7 acres of operation impacts to pronghorn crucial yearlong range would occur. • Approximately 86 acres of construction, 7 acres of operation, and 2,317 acres of indirect impacts to small game and nongame potential habitat would occur. • No raptor nests are within 1 mile of the reference line.
Castle Dale Alternative Connector	• Approximately 11 miles in length.[1] • Approximately 38 acres of construction, 10 acres of operation, and 2,282 acres of indirect impacts to mule deer crucial winter range would occur. • Approximately 1 acre of indirect impacts to moose occupied habitat would occur. • Approximately 348 acres of construction, 45 acres of operation, and 12,019 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately 6 acres of construction, 1 acre of operation, and 294 acres of indirect impacts to waterfowl potential habitat would occur. • No raptor nests are within 1 mile of the reference line.
Highway 191 Alternative Connector	• Approximately 5 miles in length.[1] • Approximately 119 acres of construction, 38 acres of operation, and 3,134 acres of indirect impacts to Utah moose occupied habitat would occur. • Approximately 22 acres of construction, 5 acres of operation, and 379 acres of indirect impacts to Utah elk crucial winter range would occur. • Approximately 175 acres of construction, 36 acres of operation, and 3,035 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately 0 acres of construction, 0 acres of operation, and 1 acre of indirect impacts to waterfowl potential habitat would occur. • No raptor nests are within 1 mile of the reference line.

Table 3.7-34 Summary of Region II Alternative Connector Impact Parameters for Wildlife

Alternative Connector	Analysis
Price Alternative Connector	• Approximately 18 miles in length.[1] • Approximately 56 acres of construction, 15 acres of operation, and 3,419 acres of indirect impacts to pronghorn crucial yearlong range would occur. • Approximately 0.1 acres of construction, 0.02 acres of operation, and 3 acres of indirect impacts to pronghorn substantial yearlong range would occur. • Approximately 246 acres of construction, 72 acres of operation, and 19,529 acres of indirect impacts to mule deer crucial winter range would occur. • Approximately 280 acres of construction, 81 acres of operation, and 21,262 acres of indirect impacts to elk crucial winter range would occur. • Approximately 6 acres of construction, 3 acres of operation, and 1,334 acres of indirect impacts to moose occupied habitat would occur. • Approximately 609 acres of construction, 75 acres of operation, and 19,623 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately 3 acres of construction, 0.4 acres of operation, and 87 acres of indirect impacts to waterfowl potential habitat would occur. • Six raptor nests are within 1 mile of the reference line. • Forty-two acres of the Summerhouse Spring BHCA are within the 250 foot-wide transmission line ROW.

[1] Length refers to length of 600-kV transmission lines, and serves as a proxy metric for avian collision potential.

[2] Indirect impacts for these species can be calculated utilizing the vegetation communities presented in Section 3.5, Vegetation, and on **Table 3.7-14**.

Region II Conclusion

Based on a comparison of impact parameters for Region II alternatives, potential construction and operation impacts to wildlife would be varied across all alternatives as shown in **Table 3.7-29**. Alternative II-F would result in the greatest direct and indirect impacts to big game habitat in comparison to the other Region II alternatives. Alternative II-C would result in the greatest direct and indirect impacts to small game habitat in comparison to the other Region II alternatives (**Table 3.7-29**). Alternative II-B would result in the greatest direct and indirect impacts to migratory bird habitat in comparison to the other Region II alternatives (**Table 3.7-29**). Alternative II-D would result in the greatest direct and indirect impacts to existing raptor nests in comparison to the other Region II alternatives (**Table 3.7-29**). Alternative II-E could also result in the highest potential construction disturbance to riparian areas near perennial streams as discussed in Section 3.9, Aquatic Biological Resources, and displayed in **Table 3.9-12**. Although potential impacts to these separate groups of species are varied, Alternative II-C would result in the greatest potential impacts to wildlife in terms of the total acreage of construction and operation impacts combined. Potential impacts to wildlife species present within the five national forests also would be greatest for Alternative II-C as shown in **Tables 3.7-28** and **3.7-30**. Even though the greatest level of impacts are associated with Alternative II-C, project effects on wildlife species and their habitat would be avoided or considered to be low magnitude and short-term in duration after applying BMPs, design features, and additional mitigation (Sections 3.7.6.2 and 3.7.6.4 and **Appendix C**).

3.7.6.5 Region III

Table 3.7-35 provides a tabulation of impacts associated with the alternative routes in Region III. Key impact parameters that relate to the impact discussion in Section 3.7.6.2, Impacts Common to All Alternative Routes and Associated Components, and specific differences by alternative are discussed below.

Table 3.7-35 Summary of Existing Conditions by Alternative within Region III

Alternative	Length (miles)	Length of Greenfield Construction	Length of Co-located Construction	Miles of Roads within 2-Mile Corridor	Miles of Roads within 2-Mile Corridor/Mile of Alternative
III-A	276	73	203	982	3.55
III-B	285	140	145	1,045	3.68
III-C	308	96	213	1,110	3.60

Alternative III-A (Applicant Proposed)

Alternative III-A Habitat Disturbance and Fragmentation

Alternative III-A would cross approximately 276 miles of wildlife habitat in Utah. Approximately 203 miles (74 percent) of this alternative will be co-located with other existing transmission lines as shown in **Table 3.7-35**. Existing conditions within the Alternative III-A 2-mile transmission line corridor relative to wildlife can be characterized as moderately disturbed and fragmented. The section of Alternative III-A crossing Millard County is fragmented and disturbed by existing BLM maintenance roads, several county roads, existing oil and gas operations, and U.S. Highway 6. Wildlife habitat along the III-A route in Beaver County is fragmented by BLM and county roads, as well as oil and gas infrastructure. The Alternate III-A corridor also crosses State Highway 21, an abandoned iron mine site located northeast of Milford, Utah, and a Union Pacific Rail line before entering into Iron County. Major causes of disturbance in Iron County include agricultural pivots, and oil and gas infrastructure. The Alternative III-A route also crosses State Highway 56 and a section of the Union Pacific Railroad before continuing into Washington County, Utah. The Alternative III-A route is collocated with existing transmission lines throughout Washington County and into Nevada and disturbance and fragmentation is mostly limited to USFS roads as the route enters the mountains. Some agriculture, the Veyo Compressor Station (located west of Veyo, Utah) and the crossing of State Highway 18 also adds to habitat disturbance and fragmentation along this section of the route. The remaining segments of Alternative III-A through Nevada are moderately disturbed by county roads, low density oil and gas and livestock operations, and private residences. However, fragmentation does increase along this stretch as the route approaches Las Vegas, Nevada, and crosses I-15 several times, as well as some smaller state highways. A total of 982 miles of existing roads are located within the 2-mile transmission line corridor as shown **Table 3.7-35**. This represents the lowest existing road density within the 2-mile transmission line corridor among Region III alternatives.

Key Parameters Summary

Game Species

Alternative III-A would result in direct disturbance to mule deer crucial winter range in Utah and desert bighorn sheep occupied habitat in Nevada (**Table 3.7-36**). Implementation of the BLM, UDWR, and USFS restriction to prevent disturbance to wintering big game species in identified crucial winter range from November 15 to April 30, would prevent direct impacts to wintering big game species. Alternative III-A would result in the construction and operation disturbance of 9,320 acres and 979 acres, respectively, of upland game bird, small game mammal, and furbearer habitat. These areas represent 0.13 percent and 0.01 percent of the available upland game bird, small game mammal, and furbearer habitat within the Region III wildlife analysis area. Alternative III-A also would result in the construction disturbance of 249 acres and operation disturbance of 26 acres of waterfowl habitat. These areas represent 0.12 percent and 0.01 percent of the available waterfowl habitat within the Region III wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to small game species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative III-A would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Table 3.7-36 Summary of Region III Alternative Route Impact Parameters for Wildlife

Parameter	Alternative III-A			Alternative III-B			Alternative III-C		
	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts
Big Game Species									
Nevada pronghorn occupied habitat (acres)	0	0	0	31	7	1,860	373	95	36,278
Percentage of existing habitat within the Region III big game analysis area	0	0	0	<0.01	<0.01	0.12	0.02	<0.01	2.40
Utah pronghorn crucial yearlong range (acres)	1,627	378	201,853	1,897	433	217,375	1,868	439	223,170
Percentage of existing habitat within the Region III big game analysis area	0.03	<0.01	3.72	0.03	<0.01	4.00	0.03	<0.01	4.11
Nevada mule deer occupied habitat (acres)	0	0	0	2	1	675	84	21	8,591
Percentage of existing habitat within the Region III big game analysis area	0	0	0	<0.01	<0.01	0.27	0.03	<0.01	3.43
Utah mule deer crucial winter range (acres)	185	51	13,692	0	0	0	0	0	0
Percentage of existing habitat within the Region III big game analysis area	0.02	<0.01	1.68	0	0	0	0	0	0
Nevada desert bighorn sheep occupied habitat (acres)	102	31	7,605	140	40	12,203	106	30	19,332
Percentage of existing habitat within the Region III big game analysis area	0.02	<0.01	1.35	0.02	<0.01	2.16	0.02	<0.01	3.42
Utah desert bighorn sheep occupied habitat (acres)	4	2	958	0	0	0	0	0	0
Percent of existing habitat within the Region III big game analysis area	<0.01	<0.01	1.41	0	0	0	0	0	0
Small Game and Nongame Species									
Upland game bird, small game mammal, furbearer, small nongame mammal, migratory bird, and reptile habitat (acres)[1]	9,320	979	374,780	9,502	862	375,681	10,327	940	435,065
Percentage of existing habitat within the Region III wildlife analysis area	0.13	0.01	5.26	0.13	0.01	5.27	0.14	0.01	6.11
Waterfowl habitat (acres)[2]	249	26	11,389	360	30	14,704	239	23	12,932
Percentage of existing habitat within the Region III wildlife analysis area	0.12	0.01	5.33	0.17	0.01	6.89	0.11	0.01	6.06
Relative Collision Potential for Migratory Birds									
Length of transmission line (miles)[4]	276			285			308		
Raptor Nests (Non-special Status)									
Number within 1 mile of the reference line[3]	254			129			137		
Bird Habitat Conservation Areas									
BHCAs crossed by the 250-foot-wide transmission line ROW (acres)	473			131			199		
Percentage of existing BHCAs within the Region III wildlife analysis area	0.07			0.02			0.03		

Table 3.7-36 Summary of Region III Alternative Route Impact Parameters for Wildlife

Parameter	Alternative III-A			Alternative III-B			Alternative III-C		
	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts
Audubon Important Bird Areas									
Pahranagat Valley Complex IBA (acres within 2-mile transmission line corridor)	0			0			188		
Percentage of existing IBA habitat within the Region III wildlife analysis area	0			0			0.31		

[1] Habitat categories used to calculate acreages of habitat disturbance include agricultural land, aspen forest and woodland, barren/sparsely vegetated, cliff and canyon, coniferous forest, deciduous forest, desert shrubland, dunes, grassland, greasewood flat, herbaceous wetland, montane grassland, montane shrubland, open water, pinyon-juniper, riparian, sagebrush shrubland, saltbush shrubland, tundra, and woody riparian and wetlands. Further discussion of these habitat types is included in Section 3.5.6, Impacts to Vegetation.

[2] Habitat categories used to calculate acreages of waterfowl habitat disturbance include herbaceous wetland, open water, riparian, and woody riparian and wetlands. Further discussion of these habitat types is included in Section 3.5.6, Impacts to Vegetation.

[3] Special status raptor species are addressed in Section 3.8, Special Status Wildlife Species. A total of 74 raptor nests of unknown species are documented in Region III. These nests potentially could be utilized by special status raptor species, thus also are tabulated in Section 3.8.5.5, Region III.

[4] Length refers to length of 600-kV transmission line and serves as a proxy metric for avian collision potential.

Nongame Species

The types of impacts to nongame species under Alternative III-A generally would be the same as those described for Alternative I-A, but would differ in the amount of habitat disturbed. **Table 3.7-36** presents a comparison of impacts to habitat in Region III. Alternative III-A would result in the construction and operation disturbance of 9,320 acres and 979 acres, respectively, of potentially suitable small mammal and reptile habitat. These areas represent 0.13 percent and 0.01 percent of the available small mammal and reptile habitat within the Region III wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to nongame species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative III-A would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Raptors and Other Migratory Birds

The types of impacts to raptors and other migratory birds under Alternative III-A generally would be the same as described for Alternative I-A, but would differ in the amount of habitat disturbed. Alternative III-A would result in the construction and operation disturbance of 9,320 acres and 979 acres, respectively, of potentially suitable raptor and other migratory bird breeding, roosting, and foraging habitat. These areas represent 0.13 percent and 0.01 percent of potentially suitable raptor and other migratory bird breeding, roosting, and foraging habitat within the Region III wildlife analysis area. The length of Alternative III-A is found in **Table 3.7-36**. Potential impacts to raptors and other migratory birds may occur as a result of collision and electrocution; however, TWE's design feature (TWE-30) requires that the Project meet or exceed the raptor safe design standards described in the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006). In addition, 254 raptor nests that are not classified as special status occur within 1 mile of the reference line along Alternative III-A (**Table 3.7-37**). In order to minimize impacts to raptors during the breeding season (January 1 to August 15), TWE has committed to implementing seasonal timing restrictions in applicable areas (TWE-32). While this design feature and BMPs presented in **Appendix C** would help to minimize impacts, additional mitigation is proposed. **WLF-1** would require TWE to conduct a breeding raptor survey and implement appropriate mitigation measures, such as buffer zones around occupied nests, as needed. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to raptors and other migratory birds under Alternative III-A would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities. There would be negligible potential for electrocution under Alternative III-A.

Table 3.7-37 Non-special Status Raptor Nests Within 1 Mile of the Reference Line in Region III

Species	Alternative III-A	Alternative III-B	Alternative III-C	Ox Valley East Alternative Variation	Ox Valley West Alternative Variation	Ox Valley Alternative Variation Comparative Portion	Pinto Alternative Variation	Pinto Alternative Variation Comparative Portion	Avon Alternative Connector	Moapa Alternative Connector
Red-tailed hawk	15	7	6	0	0	4	2	7	0	0
Common raven	91	43	49	0	0	2	2	7	4	0
Osprey	1	0	0	0	0	0	0	0	0	0
Unknown raptor species	147	79	82	1	1	11	3	50	1	0
Totals	254	129	137	1	1	17	7	64	5	0

Sources: BLM Vernal FO 2009, 2011; BLM Rawlins FO 2009, 2010; BLM Rock Springs FO 2009; BLM Cedar City FO 2010, 2012; BLM Price FO 2008; BLM Ely FO 2007; BLM Little Snake FO 2011; EPG 2012; Manti-LaSal National Forest 2012; Ashley National Forest 2010; Uintah National Forest 2011; CDOW, BLM, USFS cooperative dataset 2009; NDOW 2012; AECOM 2012.

TWE has committed to developing an operational policy and a comprehensive strategy for collecting data, minimizing impacts, and mitigating loss of migratory birds and essential habitats prior to the initiation of construction. This policy and strategy will be incorporated into a single, over-arching document (Avian Protection Plan or Bird Conservation Strategy) that will include a full listing of all minimization measures included in this analysis, as well as recommendations from the USFWS and additional information included within the Avian Protection Plan Guidelines, developed by the USFWS and APLIC in 2005 (APLIC 2012).

Alternative III-B (Agency Preferred)

Alternative III-B Habitat Disturbance and Fragmentation

Alternative III-B would cross approximately 285 miles of wildlife habitat in Utah. Approximately 145 miles (51 percent) of this alternative will be co-located with other existing transmission lines as shown in **Table 3.7-36**. Existing conditions within the Alternative III-B 2-mile transmission line corridor relative to wildlife can be characterized as moderately disturbed and fragmented. The section of Alternative III-B crossing Millard County is fragmented and disturbed by existing BLM maintenance roads, several county roads, existing oil and gas operations, and U.S. Highway 6. Wildlife habitat along the Alternative III-B route in Beaver County is moderately fragmented by BLM and county roads, as well as oil and gas infrastructure. Alternate III-B also crosses State Highway 21, an abandoned iron mine site located northeast of Milford, Utah, and a Union Pacific rail line before entering into Iron County. Major causes of disturbance in Iron County include the towns of Sun Valley, Beryl, and Modena, Utah, and the associated agricultural pivots, ranches and county roads. The Alternative III-B route also crosses State Highway 56 and a section of the Union Pacific Railroad that follows the 2-mile transmission line corridor from Sun Valley, Utah, to the boundary of Lincoln County, Nevada. A Union Pacific rail line continues to fragment the Alternate III-B corridor for approximately 16 miles into Nevada where the rail line heads west at Barclay, Nevada. The remaining segments of Alternative III-B through Nevada are moderately fragmented by county roads, low density oil and gas and livestock operations, and private residences. However, disturbance does increase along this stretch as Alternative III-B enters Clark County and intersects State Highway 168 at Moapa Town, Nevada. As the route approaches Las Vegas, Nevada, the 2-mile transmission line corridor crosses I-15 several times, as well as smaller state highways and metropolitan roadways. A total of 1,045 miles of existing roads are located within the 2-mile transmission line corridor as shown **Table 3.7-35**. This represents the highest existing road density within the 2-mile transmission line corridor among Region III alternatives.

Game Species

The types of impacts to big game species under Alternative III-B generally would be the same as described for Alternative I-A, but would differ in the amount of habitat disturbed. **Table 3.7-36** presents a comparison of impacts to habitat in Region III. Pronghorn crucial winter range in Nevada also would be impacted under Alternative III-B. Alternative III-B would result in the construction and operation disturbance of 9,502 acres and 862 acres, respectively, of upland game bird, small game mammal, and furbearer habitat. These areas represent 0.13 percent and 0.01 percent of the available upland game bird, small game mammal, and furbearer habitat within the Region III wildlife analysis area. Alternative III-B also would result in the construction disturbance of 360 acres and operation disturbance of 30 acres of waterfowl habitat. These areas represent 0.17 percent and 0.01 percent of the available waterfowl habitat within the Region III wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to small game species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative III-B would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Nongame Species

The types of impacts to nongame species under Alternative III-B generally would be the same as those described for Alternative I-A, but would differ in the amount of habitat disturbed. **Table 3.7-36** presents a comparison of impacts to habitat in Region III. Alternative III-B would result in the construction and operation disturbance of 9,502 acres and 862 acres, respectively, of potentially suitable small mammal and reptile habitat. These areas represent 0.13 percent and 0.01 percent of the available small mammal and reptile habitat within the Region III wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to nongame species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative III-B would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Raptors and Other Migratory Birds

The types of impacts to raptors and other migratory birds under Alternative III-B generally would be the same as described for Alternative I-A, but would differ in the amount of habitat disturbed. Alternative II-B would result in the construction and operation disturbance of 9,502 acres and 862 acres, respectively, of potentially suitable raptor and other migratory bird breeding, roosting, and foraging habitat. These areas represent 0.13 percent and 0.01 percent of potentially suitable raptor and other migratory bird breeding, roosting, and foraging habitat within the Region III wildlife analysis area. The length of Alternative III-B is found in **Table 3.7-36**. Potential impacts to raptors and other migratory birds may occur as a result of collision and electrocution; however, TWE's design feature (TWE-30) requires that the Project meet or exceed the raptor safe design standards described in the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006). In addition, 129 raptor nests that are not classified as special status occur within 1 mile of the reference line along Alternative III-B. These are presented in **Table 3.7-37**. In order to minimize impacts to raptors during the breeding season (January 1 to August 15), TWE has committed to implementing seasonal timing restrictions in applicable areas (TWE-32). While this design feature and BMPs presented in **Appendix C** would help to minimize impacts, additional mitigation is proposed. **WLF-1** would require TWE to conduct a breeding raptor survey and implement appropriate mitigation measures, such as buffer zones around occupied nests, as needed. After considering design features and proposed mitigation measures, there would be negligible potential for electrocution and remaining Project construction and operation impacts to raptors and other migratory birds under Alternative III-B would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

TWE has committed to developing an operational policy and a comprehensive strategy for collecting data, minimizing impacts, and mitigating loss of migratory birds and essential habitats prior to the initiation of construction. This policy and strategy will be incorporated into a single, over-arching document (Avian Protection Plan or Bird Conservation Strategy) that will include a full listing of all minimization measures included in this analysis, as well as recommendations from the USFWS and additional information included within the Avian Protection Plan Guidelines, developed by the USFWS and APLIC in 2005 (APLIC 2012).

Alternative III-C

Alternative III-C Habitat Disturbance and Fragmentation

Alternative III-C would cross approximately 308 miles of wildlife habitat in Utah. Approximately 213 miles (69 percent) of this alternative will be co-located with other existing transmission lines as shown in **Table 3.7-35**. Existing conditions within the Alternative III-C 2-mile transmission line corridor relative to wildlife can be characterized as moderately disturbed and fragmented. The section of Alternative III-C crossing Millard County is fragmented and disturbed by existing BLM maintenance roads, several county roads, existing oil and gas operations, and U.S. Highway 6. Wildlife habitat along the Alternative III-C route in Beaver County is moderately fragmented by BLM and county roads, as well as oil and gas infrastructure. Alternative III-C also crosses State Highway 21, an abandoned iron mine site located

northeast of Milford, Utah, and a Union Pacific rail line before entering into Iron County. Major causes of disturbance in Iron County include the towns of Sun Valley, Beryl, and Modena, Utah, and the associated agricultural pivots, ranches and county roads. The Alternative III-C route also crosses State Highway 56 and a section of the Union Pacific Railroad that follows the 2-mile transmission line corridor from Sun Valley, Utah, to the boundary of Lincoln County, Nevada. Alternative III-C is parallel to U.S. Highway 93 for a majority of this section of the corridor. The remaining segments of Alternative III-C through Lincoln County are sporadically fragmented by county roads, low density oil and gas and livestock operations, and private residences. The route continues to follow U.S. Highway 93 until infrastructure from Las Vegas, Nevada (I-15, Harry Allen Generating Station, Silverhawk Generating Station and Power Plant) causes nearly continuous disturbance and fragmentation to the terminus of Alternative III-C just north of the city. A total of 1,110 miles of existing roads are located within the 2-mile transmission line corridor as shown **Table 3.7-35**. This represents the second highest existing road density within the 2-mile transmission line corridor among Region III alternatives.

Game Species

The types of impacts to big game species under Alternative III-C generally would be the same as described for Alternative I-A, but would differ in the amount of habitat disturbed. **Table 3.7-36** presents a comparison of impacts to habitat in Region III. Additional mule deer and pronghorn crucial winter ranges would be impacted under Alternative III-C. Alternative III-C would result in the construction and operation disturbance of 10,327 acres and 940 acres, respectively, of upland game bird, small game mammal, and furbearer habitat. These areas represent 0.14 percent and 0.01 percent of the available upland game bird, small game mammal, and furbearer habitat within the Region III wildlife analysis area. Alternative III-C also would result in the construction disturbance of 239 acres and operation disturbance of 23 acres of waterfowl habitat. These areas represent 0.11 percent and 0.01 percent of the available waterfowl habitat within the Region III wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to small game species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative III-C would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Nongame Species

The types of impacts to nongame species under Alternative III-C generally would be the same as those described for Alternative I-A, but would differ in the amount of habitat disturbed. **Table 3.7-36** presents a comparison of impacts to habitat in Region III. Alternative III-C would result in the construction and operation disturbance of 10,327 acres and 940 acres, respectively, of potentially suitable small mammal and reptile habitat. These areas represent 0.14 percent and 0.01 percent of the available small mammal and reptile habitat within the Region III wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to nongame species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative III-C would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Raptors and Other Migratory Birds

The types of impacts to raptors and other migratory birds under Alternative III-C generally would be the same as described for Alternative I-A, but would differ in the amount of habitat disturbed. Alternative III-C would result in the construction and operation disturbance of 10,327 acres and 940 acres, respectively, of potentially suitable raptor and other migratory bird breeding, roosting, and foraging habitat. These areas represent 0.14 percent and 0.01 percent of potentially suitable raptor and other migratory bird breeding, roosting, and foraging habitat within the Region III wildlife analysis area. The length of Alternative III-B is found in **Table 3.7-36**. Potential impacts to raptors and other migratory birds may occur as a result of collision and electrocution; however, TWE's design feature (TWE-30) requires that the Project meet or exceed the raptor safe design standards described in the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006). In addition, 137 raptor nests that are not classified as special status occur within 1 mile of the reference line along Alternative III-C (**Table 3.7-37**).

In order to minimize impacts to raptors during the breeding season (January 1 to August 15), TWE has committed to implementing seasonal timing restrictions in applicable areas (TWE-32). While this design feature and BMPs presented in **Appendix C** would help to minimize impacts, additional mitigation is proposed. **WLF-1** would require TWE to conduct a breeding raptor survey and implement appropriate mitigation measures, such as buffer zones around occupied nests, as needed. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to raptors and other migratory birds under Alternative III-C would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities. There would be negligible potential for electrocution under Alternative III-C.

TWE has committed to developing an operational policy and a comprehensive strategy for collecting data, minimizing impacts, and mitigating loss of migratory birds and essential habitats prior to the initiation of construction. This policy and strategy will be incorporated into a single, over-arching document (Avian Protection Plan or Bird Conservation Strategy) that will include a full listing of all minimization measures included in this analysis, as well as recommendations from the USFWS and additional information included within the Avian Protection Plan Guidelines, developed by the USFWS and APLIC in 2005 (APLIC 2012).

USFS Management Indicator Species

The Dixie National Forest is crossed by the Project in Region III. Two wildlife species, the wild turkey and the northern flicker, are identified as MIS that are not otherwise classified as special status species. Only Alternative III-A would cross the forest, impacting 336 acres of potential wild turkey habitat and 298 acres of potential northern flicker habitat during construction. Operation would impact 59 acres of potential wild turkey habitat and 54 acres of potential northern flicker habitat. Impacts to Dixie National Forest MIS not otherwise classified as special status species are listed in **Table 3.7-38**. Impacts to MIS also classified as special status are discussed in Section 3.8, Special Status Wildlife Species.

Table 3.7-38 Summary of Region III Alternative Route Impact Parameters for USFS MIS

Parameter	Alternative III-A			Alternative III-B			Alternative III-C		
Species	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts
Dixie National Forest MIS not Otherwise Analyzed as Special Status Species[1]									
Wild turkey potential habitat (acres) Habitat categories: 1, 2, 5, 6, 7, 10, 11, 13, 16, 19, 21	336	59	15,286	0	0	0	0	0	0
Percentage of potential habitat within the Region III MIS Analysis Area	0.03	<0.01	0.81	0	0	0	0	0	0
Northern flicker potential habitat (acres) Habitat categories: 1, 2, 5, 6, 12, 16, 21	298	54	14,193	0	0	0	0	0	0
Percentage of potential habitat within the Region III MIS Analysis Area	0.02	<0.01	0.75	0	0	0	0	0	0

[1] There are no habitat impacts to northern goshawk anticipated from Alternative III-A.

Note: Please refer to Section 3.8.5.5 for indirect impacts by vegetation community/habitat type.

Region III Conclusion

Based on a comparison of impact parameters for Region III alternatives, potential construction and operation impacts to wildlife would be varied across all alternatives as shown in **Table 3.7-36**. Alternative III-C would result in the greatest direct and indirect impacts to big game, small game, and non-game habitat in comparison to the other Region III alternatives. Alternative III-A would result in the greatest impacts to existing raptor nests and BHCAs in comparison to the other Region III alternatives (**Table 3.7-36**). Alternatives III-A and III-B also could result in the highest potential construction disturbance to riparian areas near perennial streams as discussed in Section 3.9, Aquatic Biological Resources, and displayed in **Table 3.9-15**. Potential impacts to wildlife species present within the Dixie National Forest would be greatest for Alternative III-A as shown in **Table 3.7-38**. Although potential impacts to these separate groups of species are varied, Alternative III-C would result in the greatest potential impacts to wildlife in terms of the total acreage of construction and operation impacts combined. Even though the greatest level of impacts are associated with Alternative III-C, project effects on wildlife species and their habitat would be avoided or considered to be low magnitude and short-term in duration after applying BMPs, design features, and additional mitigation (Sections 3.7.6.2 and 3.7.6.5 and **Appendix C**).

Alternative Variations in Region III

Table 3.7-39 summarizes impacts associated with the alternative variations in Region III. Impacts to big game species under the three alternative variations in Region III would generally be the same as the comparable portions of Alternatives III-A, but would differ in the amount of habitat disturbed (**Table 3.7-39**). Similar to the comparable portions of Alternatives III-A, after considering design features and mitigation measures, impacts to game and nongame species from Project construction and operation would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

The Ox Valley East and Ox Valley West alternative variations are approximately 16 and 17 miles in length, respectively, and potential impacts to raptors and other migratory birds may occur as a result of collision and electrocution.

After considering design features and mitigation measures, impacts to raptors and other migratory birds from Project construction and operation would be limited primarily to habitat loss and fragmentation. The Pinto Alternative Variation is approximately 29 miles in length, of which approximately 21 miles are located within the Dixie National Forest. Potential impacts to raptors and other migratory birds may occur as a result of collision and electrocution. Impacts to Dixie National Forest MIS not otherwise classified as special status species are listed in **Table 3.7-38**. Impacts to MIS also classified as special status are discussed in Section 3.8, Special Status Wildlife Species. After considering design features and mitigation measures, impacts to raptors and other migratory birds from construction and operation of the Pinto Alternative Variation would be limited primarily to habitat loss, fragmentation, disturbance from routine maintenance activities, and disturbance during routine maintenance activities.

Alternative Connectors in Region III

The Moapa and the Avon alternative connectors would include minimal increases of total habitat disturbance relative to the total impacts associated with Region III alternatives, if they were to be utilized. **Table 3.7-40** summarizes impacts associated with the alternative connectors in Region III.

Table 3.7-39 Summary of Region III Alternative Variation Impact Parameters for Wildlife

Impact Parameters	Ox Valley East Alternative Variation			Comparable Portion of Alternative III-A			Ox Valley West Alternative Variation			Comparable Portion of Alternative III-A			Pinto Alternative Variation			Comparable Portion of Alternative III-A		
	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts
Big Game Species																		
Utah mule deer crucial winter range	0	0	0	27	6	804	0	0	0	27	6	804	57	14	3,936	73	17	3,734
Percentage of existing habitat within the Region III big game analysis area	0	0	0	<0.01	<0.01	0.10	0	0	0	<0.01	<0.01	0.10	<0.01	<0.01	0.48	<0.01	<0.01	0.46
Small Game and Nongame Species																		
Small game and nongame potential habitat (acres)[1]	584	99	17,210	528	94	19,692	595	99	12,774	528	94	19,692	993	109	35,239	827	122	29,013
Percentage of potential habitat within the Region III wildlife analysis area	<0.01	<0.01	0.24	<0.01	<0.01	0.28	<0.01	<0.01	0.18	<0.01	<0.01	0.28	0.01	<0.01	0.49	0.01	<0.01	0.41
Waterfowl																		
Waterfowl potential habitat[2]	9	3	551	6	1	285	9	3	537	6	1	285	6	1	585	6	1	322
Percentage of potential habitat within the Region III wildlife analysis area	<0.01	<0.01	0.26	<0.01	<0.01	0.13	<0.01	<0.01	0.25	<0.01	<0.01	0.13	<0.01	<0.01	0.27	<0.01	<0.01	0.15
Relative Collision Potential for Migratory Birds																		
Length of transmission line (miles)[3]	16			15			17			15			29			24		
Raptor Nests (Non-special Status)																		
Number of raptor nests within 1 mile of the reference line[4]	1			17			1			17			7			64		
Bird Habitat Conservation Areas																		
BHCAs crossed by the 250-foot-wide transmission line ROW (acres)	29			153			29			153			302			122		
Percentage of existing BHCA habitat within the Region III wildlife analysis area	<0.01			0.02			<0.01			0.02			0.04			0.02		
Audubon Important Bird Areas																		
IBA (acres) within 2-mile transmission line corridor	0			0			0			0			0			0		
IBA (acres) within the Region III wildlife analysis area	0			0			0			0			0			0		

Table 3.7-39 Summary of Region III Alternative Variation Impact Parameters for Wildlife

Impact Parameters	Ox Valley East Alternative Variation			Comparable Portion of Alternative III-A			Ox Valley West Alternative Variation			Comparable Portion of Alternative III-A			Pinto Alternative Variation			Comparable Portion of Alternative III-A		
	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts
Dixie National Forest MIS Not Otherwise Classified as Special Status Species[5]																		
Wild turkey potential Habitat categories: 1, 2, 5, 6, 7, 10, 11, 13, 16, 19, 21	299	50	0	242	43	8,943	292	47	5,815	242	43	9,223	495	56	19,532	252	46	11,689
Percentage of potential habitat within the Region III MIS Analysis Area	0.02	<0.01	0	0.02	<0.01	0.69	0.02	<0.01	0.45	0.02	<0.01	0.71	0.04	<0.01	1.52	0.02	<0.01	0.90
Northern flicker Habitat categories: 1, 2, 5, 6, 12, 16, 21	297	49	0	238	43	8,783	290	46	5,663	238	43	9,032	491	56	19,401	249	46	11,617
Percentage of potential habitat within the Region III MIS Analysis Area	0.02	<0.01	0	0.02	<0.01	0.69	0.02	<0.01	0.44	0.02	<0.01	0.71	0.04	<0.01	1.52	0.02	<0.01	0.91

[1] Vegetation communities/habitat categories used to calculate acreages of potential habitat disturbance include agricultural land, aspen forest and woodland, barren/sparsely vegetated, cliff and canyon, coniferous forest, deciduous forest, desert shrubland, dunes, grassland, greasewood flat, herbaceous wetland, montane grassland, montane shrubland, open water, pinyon-juniper, riparian, sagebrush shrubland, saltbush shrubland, tundra, and woody riparian and wetlands. Further discussion of these vegetation communities is included in Section 3.5.6, Impacts to Vegetation.

[2] Vegetation communities/habitat categories used to calculate acreages of disturbance to potential waterfowl habitat include open water, herbaceous wetland, riparian, and woody riparian and wetlands. Further discussion of these vegetation communities is included in Section 3.5.6, Impacts to Vegetation.

[3] Length refers to length of 600-kV transmission line and serves as a metric for avian collision potential.

[4] Special status raptor species are addressed in Section 3.8, Special Status Wildlife Species. A total of two raptor nests for which the species is not known are documented in the comparable portion of the Pinto Alternative Variation. These nests potentially could be utilized by special status raptor species, thus also are tabulated in Section 3.8, Special Status Wildlife Species.

[5] Potential construction impacts to northern goshawk habitat are less than five acres from the Ox Valley East and West Variations; potential construction impacts from the Pinto Variation are less than 1 acre.

Table 3.7-40 Summary of Region III Alternative Connector Impact Parameters for Wildlife

Alternative Connector	Analysis
Moapa Alternative Connector	• Approximately 13 miles in length.[1] • Approximately 9 acres of construction, 2 acres of operation, and 358 acres of indirect impacts to desert bighorn sheep occupied habitat would occur. • Approximately 429 acres of construction, 34 acres of operation, and 13,407 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately 136 acres of construction and 10 acres of operation and 2,972 acres of indirect impacts to waterfowl potential habitat would occur. • The Lower Muddy River BHCA is crossed by the 250 foot-wide transmission line ROW for a total of 30 acres. • No raptor nests are within 1 mile of the reference line.
Avon Alternative Connector	• Approximately 8 miles in length.[1] • Approximately 104 acres of construction, 21 acres of operation, and 8,614 acres of indirect impacts to pronghorn crucial yearlong range would occur. • Approximately 264 acres of construction and 21 acres of operation and 8,316 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately 0 acres of construction, 0 acres of operation, and 108 acres of indirect impacts to waterfowl potential habitat would occur. • Five raptor nests are within 1 mile of the reference line.

[1]Length refers to length of transmission lines, and serves as a proxy metric for avian collision potential.

Table 3.7-41 provides a comparison of alternative electrode bed locations proposed in Region III. Some locations might serve multiple alternative routes, while others could only be associated with a particular alternative route.

Table 3.7-41 Summary of Region III Alternative Ground Electrode System Location Impact Parameters for Wildlife[1]

Alternative Ground Electrode System Locations	Analysis
Mormon Mesa - Carp Elgin Rd (Alternative III-A)	• Approximately 6 miles in length.[2] • No additional impacts to desert bighorn sheep occupied habitat would occur. • Approximately 91 acres of construction, 19 acres of operation, and 13,594 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately 35 acres of construction, 7 acres of operation, and 3,746 acres of indirect impacts to waterfowl potential habitat would occur. • Approximately 999 acres of indirect impacts to the Virgin River BHCA would occur. • Approximately 764 acres of indirect impacts to the Virgin River IBA would occur.
Mormon Mesa - Carp Elgin Rd (Alternative III-B)	• Approximately 8 miles in length.[2] • No additional impacts to desert bighorn sheep occupied habitat would occur. • Approximately 103 acres of construction, 26 acres of operation, and 13,594 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately 39 acres of construction, 10 acres of operation, and 3,746 acres of indirect impacts to waterfowl potential habitat would occur. • Approximately 999 acres of indirect impacts to the Virgin River BHCA would occur. • Approximately 764 acres of indirect impacts to the Virgin River IBA would occur.

Table 3.7-41 Summary of Region III Alternative Ground Electrode System Location Impact Parameters for Wildlife[1]

Alternative Ground Electrode System Locations	Analysis
Halfway Wash - Virgin River (Alternative III-A)	• Approximately 4 miles in length.[2] • No additional impacts to desert bighorn sheep occupied habitat would occur. • Approximately 84 acres of construction, 16 acres of operation, and 13,349 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately 18 acres of construction, 3 acres of operation, and 2,347 acres of indirect impacts to waterfowl potential habitat would occur.
Halfway Wash – Virgin River (Alternative III-B)	• Approximately 6 miles in length.[2] • No additional impacts to desert bighorn sheep occupied habitat would occur. • Approximately 93 acres of construction, 20 acres of operation, and 13,349 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately 20 acres of construction, 4 acres of operation, and 2,347 acres of indirect impacts to waterfowl potential habitat would occur.
Halfway Wash East (Alternative III-A)	• Approximately 8 miles in length.[2] • No additional impacts to desert bighorn sheep occupied habitat would occur. • Approximately 104 acres of construction, 26 acres of operation, and 13,278 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately 28 acres of construction, 7 acres of operation, and 3,378 acres of indirect impacts to waterfowl potential habitat would occur. • Approximately 216 acres of indirect impacts of the Virgin River BHCA would occur.
Halfway Wash East (Alternative III-B)	• Approximately 8 miles in length.[2] • No additional impacts to desert bighorn sheep occupied habitat would occur. • Approximately 102 acres of construction, 25 acres of operation, and 13,278 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately 28 acres of construction, 7 acres of operation, and 3,378 acres of indirect impacts to waterfowl potential habitat would occur. • Approximately 216 acres of indirect impacts of the Virgin River BHCA would occur.
Meadow Valley 2 (Alternative III-C)	• Approximately 22 miles in length.[2] • No additional impacts to desert bighorn sheep occupied habitat would occur. • Approximately 174 acres of construction, 66 acres of operation, 13,594 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately 16 acres of construction, 6 acres of operation, and 797 acres of indirect impacts to waterfowl potential habitat would occur. • Approximately 1,075 acres of indirect impacts to the Lower Muddy River BHCA would occur.
Delta Ground Electrode Siting Area	• Approximately 19 miles in length.[1] • Approximately 131 acres of construction, 40 acres of operation, and 12,978 acres of indirect impacts to pronghorn crucial yearlong range would occur. • Approximately 1 acre of construction, 0.5 acres of operation, and 310 acres of indirect impacts to mule deer crucial winter range would occur. Approximately 381 acres of indirect impacts to the Vernon Unit migrating mule deer crucial winter range would occur. • Approximately 129 acres of construction, 39 acres of operation, and 13,232 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately 2 acres of construction, 1 acre of operation, and 579 acres of indirect impacts to waterfowl potential habitat would occur. • Approximately 1,451 acres of indirect impacts to the Fish Springs National Wildlife Refuge BHCA would occur. • Approximately <1 acre of indirect impacts to Fish Springs National Wildlife Refuge UT16 IBA would occur.

[1] Ground electrode systems are described in detail in Section 2.5.1, Alternative Transmission Line Routes and Ancillary Facilities by Region.

[2] Length refers to length of transmission lines and serves as a metric for avian collision potential.

3.7.6.6 Region IV

Table 3.7-42 provides a tabulation of impacts associated with the alternative routes in Region IV. Key impact parameters that relate to the impact discussion in Section 3.7.6.2, Impacts Common to All Alternative Routes and Associated Components, and specific differences by alternative are discussed below.

Table 3.7-42 Summary of Region IV Alternative Route Impact Parameters for Wildlife

Parameter	Alternative IV-A (Applicant Proposed and Agency Preferred)			Alternative IV-B			Alternative IV-C		
	Construction impacts	Operation Impacts	Indirect Impacts	Construction impacts	Operation Impacts	Indirect Impacts	Construction impacts	Operation Impacts	Indirect Impacts
Big Game Species									
Nevada desert bighorn sheep occupied habitat (acres)	122	39	8,259	69	31	4,444	39	19	4,562
Percentage of potential habitat within the Region IV big game analysis area	0.05	0.01	3.21	0.03	0.01	1.72	0.02	<0.01	1.77
Small Game and Nongame Species									
Upland game bird, small game mammal, furbearer, small nongame mammal, migratory bird, and reptile potential habitat (acres)[1]	900	98	30,576	897	121	25,722	924	122	28,901
Percentage of potential habitat within the Region IV wildlife analysis area	0.11	0.01	3.70	0.11	0.01	3.11	0.11	0.01	3.50
Waterfowl potential habitat (acres)[2]	13	1	433	21	7	1,076	21	7	1,171
Percentage of potential habitat within the Region IV wildlife analysis area	0.02	<0.01	0.59	0.03	<0.01	1.47	0.03	<0.01	1.59
Relative Collision Potential for Migratory Birds									
Length of transmission line (miles)[4]	37			39			44		
Raptor Nests (Non-special Status)									
Number within 1 mile of the reference line[3]	0			0			0		
Bird Habitat Conservation Areas									
Acres of BHCAs crossed by the 250 foot-wide transmission line ROW	124			328			604		
Percentage of existing BHCA habitat within the Region IV wildlife analysis area	0.03			0.08			0.14		
Audubon Important Bird Areas									
IBA (acres within 2-mile transmission line corridor)	0			643			643		
Percentage of existing IBA within the Region IV wildlife analysis area	0			1.01			1.01		

[1] Vegetation communities/habitat categories used to calculate acreages of potential habitat disturbance include agricultural land, aspen forest and woodland, barren/sparsely vegetated, cliff and canyon, coniferous forest, deciduous forest, desert shrubland, dunes, grassland, greasewood flat, herbaceous wetland, montane grassland, montane shrubland, pinyon-juniper, riparian, sagebrush shrubland, saltbush shrubland, tundra, and woody riparian and wetlands. Further discussion of these vegetation communities is included in Section 3.5.6, Impacts to Vegetation.

[2] Vegetation communities/habitat categories used to calculate acreages of potential waterfowl habitat disturbance include open water, herbaceous wetland, riparian, and woody riparian and wetlands. Further discussion of these vegetation communities is included in Section 3.5.6, Impacts to Vegetation.

[3] Special status raptor species are addressed in Section 3.8, Special Status Wildlife Species.

[4] Length refers to potential length of 600-kV transmission line and serves as a proxy metric for avian collision potential.

Alternative IV-A (Applicant Proposed and Agency Preferred)

Alternative IV-A Habitat Disturbance and Fragmentation

Alternative IV-A would cross approximately 37 miles of wildlife habitat in southern Nevada. This alternative will be entirely co-located with other existing transmission lines as shown in **Table 3.7-43**. Existing conditions within the Alternative IV-A 2-mile transmission line corridor relative to wildlife can be characterized as highly disturbed and fragmented. Alternative IV-A in southern Nevada is highly fragmented and disturbed by three major highways; Highway 147, Highway 564, and Highway 93, as well as many other city and county roads within the 2-mile transmission line corridor. Major sources of disturbance within the Alternative IV-A 2-mile transmission line corridor include a residential portion along the eastern flank of the city of Henderson, Nevada, a Las Vegas Valley Water waste water treatment plant, and a Pabco gypsum quarry located northeast of the city of Las Vegas. A total of 95 miles of existing roads are located within the 2-mile transmission line corridor as shown **Table 3.7-43**.

Table 3.7-43 Summary of Existing Conditions by Alternative within Region IV

Alternative	Length (miles)	Length of Greenfield Construction	Length of Co-Located Construction	Miles of Roads within 2-Mile Corridor	Miles of Roads within 2-Mile Corridor/Mile of Alternative
IV-A	37	0	37	95	2.57
IV-B	39	12	34	132	3.38
IV-C	44	12	33	175	3.98

Key Parameters Summary

Game Species

The types of impacts to big game species under Alternative IV-A generally would be the same as described for Alternative I-A, but would differ in the amount of potential habitat disturbed. **Table 3.7-42** presents a comparison of impacts to potential habitat in Region IV. Desert bighorn sheep occupied habitat would be impacted under Alternative IV-A. Alternative IV-A would result in the construction and operation disturbance of 900 acres and 98 acres, respectively, of upland game bird, small game mammal, and furbearer potential habitat. These areas represent 0.11 percent and 0.01 percent of the available upland game bird, small game mammal, and furbearer potential habitat within the Region IV wildlife analysis area. Alternative IV-A also would result in the construction disturbance of 13 acres and operation disturbance of 1 acre of waterfowl potential habitat. These areas represent 0.02 percent and <0.01 percent of the available waterfowl potential habitat within the Region IV wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to small game species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative IV-A would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Nongame Species

The types of impacts to nongame species under Alternative IV-A generally would be the same as those described for Alternative I-A, but would differ in the amount of potential habitat disturbed. **Table 3.7-42** presents a comparison of impacts to potential habitat in Region IV. Alternative IV-A would result in the construction and operation disturbance of 900 acres and 98 acres, respectively, of small mammal and reptile potential habitat. These areas represent 0.11 percent and 0.01 percent of the available small mammal and reptile potential habitat within the Region IV wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to nongame species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative IV-A would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Raptors and Other Migratory Birds

The types of impacts to raptors and other migratory birds under Alternative IV-A would generally be the same as described for Alternative I-A, but would differ in the amount of potential habitat disturbed. Alternative IV-A would result in the construction and operation disturbance of 900 acres and 98 acres, respectively, of potential suitable raptor and other migratory bird breeding, roosting, and foraging habitat. These areas represent 0.11 percent and 0.01 percent of potentially suitable raptor and other migratory bird breeding, roosting, and foraging habitat within the Region IV wildlife analysis area. The length of Alternative IV-A is found in **Table 3.7-41**. Potential impacts to raptors and other migratory birds may occur as a result of collision and electrocution; however, TWE's design feature (TWE-30) requires that the Project meet or exceed the raptor safe design standards described in the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006).

No non-special status raptor nests have been identified within one mile of the reference line along Alternative IV-A. In order to minimize impacts to raptors during the breeding season (January 1 to August 15), TWE has committed to implementing seasonal timing restrictions in applicable areas (TWE-32). While this design feature and BMPs presented in **Appendix C** would help to minimize impacts, additional mitigation is proposed. **WLF-1** would require TWE to conduct a breeding raptor survey and implement appropriate mitigation measures, such as buffer zones around occupied nests, as needed. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to raptors and other migratory birds under Alternative IV-A would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities. There would be negligible potential for electrocution under Alternative IV-A.

TWE has committed to developing an operational policy and a comprehensive strategy for collecting data, minimizing impacts, and mitigating loss of migratory birds and essential habitats prior to the initiation of construction. This policy and strategy will be incorporated into a single, over-arching document (Avian Protection Plan or Bird Conservation Strategy) that will include a full listing of all minimization measures included in this analysis, as well as recommendations from the USFWS and additional information included within the Avian Protection Plan Guidelines, developed by the USFWS and APLIC in 2005 (APLIC 2012).

Alternative IV-B

Alternative IV-B Habitat Disturbance and Fragmentation

Alternative IV-B would cross approximately 39 miles of wildlife habitat in Nevada. Approximately 34 miles (87 percent) of this alternative will be co-located with other existing transmission lines as shown in **Table 3.7-43**. Existing conditions within the Alternative IV-B 2-mile transmission line corridor relative to wildlife can be characterized as highly disturbed and fragmented. Alternative IV-B in southern Nevada is highly fragmented and disturbed by four major highways; Highway 147, Highway 564, Highway 93, and Highway 95, as well as many other city and county roads within the 2-mile transmission line corridor. Major sources of disturbance within the Alternative IV-B 2-mile transmission line corridor include the northern portion of Boulder City, Nevada, a Pabco gypsum quarry located northeast of the city of Las Vegas, and low density industrial operations to the west of Lake Las Vegas. Wildlife habitat along the Alternative IV-B is also fragmented by the existence of Lakeshore road, the River Mountain Loop Trial, and the Historic Railroad hiking trail, which parallel the 2-mile transmission line corridor immediately to the west of Lake Las Vegas. A total of 132 miles of existing roads are located within the 2-mile transmission line corridor as shown **Table 3.7-43**.

Game Species

The types of impacts to big game species under Alternative IV-B generally would be the same as described for Alternative I-A, but would differ in the amount of potential habitat disturbed. **Table 3.7-42** presents a comparison of impacts to potential habitat in Region IV. Alternative IV-B would result in the construction

and operation disturbance of 897 acres and 121 acres, respectively, of upland game bird, small game mammal, and furbearer potential habitat. These areas represent 0.11 percent and 0.01 percent of the available upland game bird, small game mammal, and furbearer potential habitat within the Region IV wildlife analysis area. Alternative IV-B also would result in the construction disturbance of 21 acres and operation disturbance of 7 acres of waterfowl potential habitat. These areas represent 0.03 percent and <0.01 percent of the available waterfowl potential habitat within the Region IV wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to small game species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative IV-B would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Nongame Species

The types of impacts to nongame species under Alternative IV-B generally would be the same as those described for Alternative I-A, but would differ in the amount of potential habitat disturbed. **Table 3.7-42** presents a comparison of impacts to potential habitat in Region IV. Alternative IV-B would result in the construction and operation disturbance of 897 and 121 acres, respectively, of small mammal and reptile potential habitat. These areas represent 0.11 percent and 0.01 percent of the available small mammal and reptile potential habitat within the Region IV wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to nongame species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative IV-B would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Raptors and Other Migratory Birds

The types of impacts to raptors and other migratory birds under Alternative IV-B generally would be the same as described for Alternative I-A, but would differ in the amount of potential habitat disturbed. Alternative IV-B would result in the construction and operation disturbance of 897 acres and 121 acres, respectively, of potentially suitable raptor and other migratory bird breeding, roosting, and foraging habitat. These areas represent 0.11 percent and 0.01 percent of potentially suitable raptor and other migratory bird breeding, roosting, and foraging habitat within the Region IV wildlife analysis area. The length of Alternative IV-B is found in **Table 3.7-42**. Potential impacts to raptors and other migratory birds may occur as a result of collision and electrocution; however, TWE's design feature (TWE-30) requires that the Project meet or exceed the raptor safe design standards described in the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006).

No non-special status raptor nests have been identified within one mile of the reference line along Alternative IV-B. In order to minimize impacts to raptors during the breeding season (January 1 to August 15), TWE has committed to implementing seasonal timing restrictions in applicable areas (TWE-32). While this design feature and BMPs presented in **Appendix C** would help to minimize impacts, additional mitigation is proposed. **WLF-1** would require TWE to conduct a breeding raptor survey and implement appropriate mitigation measures, such as buffer zones around occupied nests, as needed. After considering design features and proposed mitigation measures, there would be negligible potential for electrocution and remaining Project construction and operation impacts to raptors and other migratory birds under Alternative IV-B would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities. There would be negligible potential for electrocution under Alternative IV-B.

TWE has committed to developing an operational policy and a comprehensive strategy for collecting data, minimizing impacts, and mitigating loss of migratory birds and essential habitats prior to the initiation of construction. This policy and strategy will be incorporated into a single, over-arching document (Avian Protection Plan or Bird Conservation Strategy) that will include a full listing of all minimization measures

included in this analysis, as well as recommendations from the USFWS and additional information included within the Avian Protection Plan Guidelines, developed by the USFWS and APLIC in 2005 (APLIC 2012).

Alternative IV-C

Alternative IV-C Habitat Disturbance and Fragmentation

Alternative IV-C would cross approximately 44 miles of wildlife habitat in Nevada. Approximately 33 miles (75 percent) of this alternative would be co-located with other existing transmission lines as shown in **Table 3.7-43**. Existing conditions within the Alternative IV-C 2-mile transmission line corridor relative to wildlife can be characterized as highly disturbed and fragmented. Alternative IV-C in southern Nevada is highly fragmented and disturbed by four major highways; Highway 147, Highway 564, Highway 93, and Highway 95, as well as many other city and county roads within the 2-mile transmission line corridor. Major sources of disturbance within the Alternative IV-C 2-mile transmission line corridor include a Pabco gypsum quarry located northeast of the city of Las Vegas, and low density industrial operations to the West of Lake Las Vegas. Wildlife habitat along the Alternative IV-C also is fragmented by the existence of Lakeshore road, the River Mountain Loop Trial, and the Historic Railroad hiking trail, which parallel the 2-mile transmission line corridor immediately to the West of Lake Las Vegas. A total of 175 miles of existing roads are located within the 2-mile transmission line corridor as shown **Table 3.7-43**.

Game Species

The types of impacts to big game species under Alternative IV-C generally would be the same as described for Alternative I-A, but would differ in the amount of potential habitat disturbed. **Table 3.7-42** presents a comparison of impacts to potential habitat in Region IV. Alternative IV-C would result in the construction and operation disturbance of 924 acres and 122 acres, respectively, of upland game bird, small game mammal, and furbearer potential habitat. These areas represent 0.11 percent and 0.01 percent of the available upland game bird, small game mammal, and furbearer potential habitat within the Region IV wildlife analysis area. Alternative IV-C also would result in the construction disturbance of 21 acres and operation disturbance of 7 acres of waterfowl potential habitat. These areas represent 0.03 percent and <0.01 percent of the available waterfowl potential habitat within the Region IV wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to small game species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative IV-C would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Nongame Species

The types of impacts to nongame species under Alternative IV-C generally would be the same as those described for Alternative I-A, but would differ in the amount of potential habitat disturbed. **Table 3.7-42** presents a comparison of impacts to potential habitat in Region IV. Alternative IV-C would result in the construction and operation disturbance of 924 acres and 122 acres, respectively, of small mammal and reptile potential habitat. These areas represent 0.11 percent and 0.01 percent of the available small mammal and reptile habitat within the Region IV wildlife analysis area. Through implementation of TWE's design feature (TWE-32), direct impacts to nongame species would be limited during sensitive periods (e.g., nesting and breeding). Therefore, impacts under Alternative IV-C would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Raptors and Other Migratory Birds

The types of impacts to raptors and other migratory birds under Alternative IV-C generally would be the same as described for Alternative I-A, but would differ in the amount of potential habitat disturbed. Alternative IV-C would result in the construction and operation disturbance of 924 acres and 122 acres, respectively, of potentially suitable raptor and other migratory bird breeding, roosting, and foraging habitat. These areas represent 0.11 percent and 0.01 percent of potentially suitable raptor and other migratory bird

breeding, roosting, and foraging habitat within the Region IV wildlife analysis area. The length of Alternative IV-C is found in **Table 3.7-42**. Potential impacts to raptors and other migratory birds may occur as a result of collision and electrocution; however, TWE's design feature (TWE-30) requires that the Project meet or exceed the raptor safe design standards described in the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006).

No non-special status raptor nests have been identified within one mile of the reference line along Alternative IV-C. In order to minimize impacts to raptors during the breeding season (January 1 to August 15), TWE has committed to implementing seasonal timing restrictions in applicable areas (TWE-32). While this design feature and BMPs presented in **Appendix C** would help to minimize impacts, additional mitigation is proposed. **WLF-1** would require TWE to conduct a breeding raptor survey and implement appropriate mitigation measures, such as buffer zones around occupied nests, as needed. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to raptors and other migratory birds under Alternative IV-C would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities. There would be negligible potential for electrocution under Alternative IV-C.

TWE has committed to developing an operational policy and a comprehensive strategy for collecting data, minimizing impacts, and mitigating loss of migratory birds and essential habitats prior to the initiation of construction. This policy and strategy will be incorporated into a single, over-arching document (Avian Protection Plan or Bird Conservation Strategy) that will include a full listing of all minimization measures included in this analysis, as well as recommendations from the USFWS and additional information included within the Avian Protection Plan Guidelines, developed by the USFWS and APLIC in 2005 (APLIC 2012).

Region IV Conclusion

Based on a comparison of impact parameters for Region IV alternatives, potential construction and operation impacts to wildlife would be greatest for Alternative IV-C as shown in **Table 3.7-42**. Potential effects for Alternative IV-B would be similar to those of Alternative IV-C although less overall acreage would be impacted (**Table 3.7-42**). Potential effects for Alternative IV-A would be relatively low compared to those of Alternatives IV-B and IV-C. Alternative IV-C would result in the greatest combined direct and indirect impacts to big game habitat, small game habitat, and migratory bird habitat in comparison to the other Region IV alternatives (**Table 3.7-42**). Alternative IV-C also could result in the highest potential construction disturbance to riparian areas near perennial streams as discussed in Section 3.9, Aquatic Biological Resources, and displayed in **Table 3.9-19**. Even though the greatest level of impacts are associated with Alternative IV-C, project effects on wildlife species and their habitat would be avoided or considered to be low magnitude and short-term in duration after applying BMPs, design features, and additional mitigation (Sections 3.7.6.2 and 3.7.6.6 and **Appendix C**).

Alternative Variations in Region IV

The types of impacts to big game species under the Marketplace Alternative Variation in Region IV generally would be the same as the comparable portions of Alternatives IV-B, but would differ in the amount of potential habitat disturbed (**Table 3.7-44**). Similar to the comparable portions of Alternatives IV-B, after considering design features and mitigation measures, impacts to game and nongame species from Project construction and operation would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

Table 3.7-44 Summary of Region IV Alternative Variation Impact Parameters for Wildlife

Impact Parameters	Marketplace Alternative Variation			Comparable Portion of Alternative IV-B		
	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts
Big Game Species						
Nevada desert bighorn sheep occupied habitat (acres)	21	4	2,230	0	0	0
Percentage of existing habitat within the Region IV big game analysis area	<0.01	<0.01	0.87	0	0	0
Small Game and Nongame Species						
Small game and nongame potential habitat (acres)[1]	117	10	3,121	1	<1	51
Percentage of potential habitat within the Region IV wildlife analysis area	0.01	<0.01	0.38	<0.01	<0.01	0.01
Waterfowl potential habitat[2]	0	0	0	0	0	0
Percentage of potential habitat within the Region IV wildlife analysis area	0	0	0	0	0	0
Relative Collision Potential for Migratory Birds						
Length of transmission line (miles)[3]	8			7		
Raptor Nests (Non-special Status)						
Number of raptor nests within 1 mile of the reference line	0			0		
Bird Habitat Conservation Areas						
BHCAs crossed by the 250-foot-wide transmission line ROW (acres)	0			0		
Percentage of existing habitat within the Region IV wildlife analysis area	0			0		
Audubon Important Bird Areas						
IBA (acres) within 2-mile transmission line corridor	0			0		
IBA (acres) within the Region IV wildlife analysis area	0			0		

[1] Vegetation communities/habitat categories used to calculate acreages of potential habitat disturbance include agricultural land, aspen forest and woodland, barren/sparsely vegetated, cliff and canyon, conifer forest, deciduous forest, desert shrubland, dunes, grassland, greasewood flat, herbaceous wetland, montane grassland, montane shrubland, open water, riparian, pinyon-juniper, sagebrush shrubland, saltbush shrubland, tundra, and woody riparian and wetlands. Further discussion of these vegetation communities is included in Section 3.5.6, Impacts to Vegetation.

[2] Vegetation communities/habitat categories used to calculate acreages of waterfowl potential habitat disturbance include open water, herbaceous wetland, riparian, and woody riparian and wetlands. Further discussion of these vegetation communities is included in Section 3.5.6, Impacts to Vegetation.

[3] Length refers to length of 600-kV transmission line and serves as a proxy metric for avian collision potential.

The Marketplace Alternative Variation is 8 miles in length and potential impacts to raptors and other migratory birds may occur as a result of collision and electrocution. After considering design features and proposed mitigation measures, impacts to raptors and other migratory birds from construction and operation of the Marketplace Alternative Variation would be limited primarily to habitat loss, fragmentation, mortality from collisions, negligible potential for electrocution, and disturbance during routine maintenance activities.

Table 3.7-44 provides a tabulation of impacts associated with the Marketplace Alternative Variation in Region IV.

Alternative Connectors in Region IV

The five alternative connectors would include minimal increases of total habitat disturbance relative to the total impacts associated with Region IV alternatives if they were to be utilized. These alternative connectors would cross occupied desert bighorn sheep habitat. **Table 3.7-45** summarizes impacts associated with the alternative connectors in Region IV.

Table 3.7-45 Summary of Region IV Alternative Connector Impact Parameters for Wildlife

Alternative Connector	Analysis
Sunrise Mountain Alternative Connector	• Approximately 3 miles in length.[1] • Approximately 87 acres of construction; 8 acres of operation; and 2,208 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately 34 acres of indirect impacts would occur to waterfowl potential habitat. • No raptor nests are within 1 mile of the reference line.
Lake Las Vegas Alternative Connector	• Approximately 4 miles in length.[1] • Approximately 24 acres of construction; 9 acres of operation; and 779 acres of indirect impacts to desert bighorn sheep occupied habitat would occur. • Approximately 115 acres of construction, 15 acres of operation, and 1,305 acres of indirect impacts to small game and nongame potential habitat would occur. • 118 acres of BHCAs are within the 250 foot-wide transmission line ROW. • No raptor nests are within 1 mile of the reference line.
Three Kids Mine Alternative Connector	• Approximately 5 miles in length.[1] • Approximately 69 acres of construction, 26 acres of operation, and 1,507 acres of indirect impacts to desert bighorn sheep occupied habitat would occur. • Approximately 166 acres of construction, 29 acres of operation, and 1,657 acres of indirect impacts to small game and nongame potential habitat would occur. • 118 acres of BHCAs are within the 250-foot-wide transmission line ROW. • No raptor nests are within 1 mile of the reference line.
River Mountains Alternative Connector	• Approximately 7 miles in length.[1] • Approximately 136 acres of construction, 56 acres of operation, and 5,904 acres of indirect impacts to desert bighorn sheep occupied habitat would occur. • Approximately 270 acres of construction, 54 acres of operation, and 5,537 acres of indirect impacts to small game and nongame potential habitat would occur. • Approximately 1 acre of construction, 0.1 acres of operation, and 11 acres of indirect impacts to waterfowl potential habitat would occur. • No raptor nests are within 1 mile of the reference line.
Railroad Pass Alternative Connector (Alts IV-A & IV-B)	• Approximately 3 miles in length.[1] • Approximately 20 acres of construction, 4 acres of operation, and 679 acres of indirect impacts to desert bighorn sheep occupied habitat would occur. • Approximately 10 acres of construction, 3 acres of operation, and 830 acres of indirect impacts to small game and nongame potential habitat would occur. • No raptor nests are within 1 mile of the reference line.

[1]Length refers to length of transmission lines, and serves as a proxy metric for avian collision potential.

3.7.6.7 Residual Impacts

Although it is anticipated that wildlife mitigation measures would be successfully implemented, some residual impacts to wildlife would occur. Wildlife injuries and mortalities are expected to occur as a result of collisions with transmission towers, guy wires, transmission lines, and wildlife potential vehicles. Quantification of these impacts is not presented in this analysis due to the lack of available data and the variability of wildlife populations.

It is anticipated that reclamation efforts would be successful and no residual impacts to habitats will occur. Timeframes for successful reclamation can vary by habitat type and initial impact intensity. During extended periods of reclamation, it is expected that habitat function may be reduced until reclamation is complete.

3.7.6.8 Impacts to Wildlife from the No Action Alternative

Under the No Action Alternative, the BLM would not issue a ROW grant or temporary use permit, the USFS would not issue a special use permit for the ROW on lands administered by the USFS, and the proposed Project would not be implemented. The analysis areas would continue to be subject to current authorizations and land uses (e.g., livestock grazing, agriculture, energy development, mining, etc.). The previously described impacts to wildlife associated with the development of the proposed Project would not occur.

3.7.6.9 Irreversible and Irretrievable Commitment of Resources

Construction and operation of any of the project alternatives would result in the irretrievable commitment of both wildlife and potential habitats during the life of the Project. Depending on the selection of alternatives, the amount of wildlife habitat irretrievably committed would range from 23,984 acres to 29,539 acres. However, as discussed **Appendix D**, it is anticipated that upon decommissioning of the Project reclamation measures would result in the return of impacted areas to native habitats. Some vegetation communities are expected to return to a native state within in a relatively short period of time (i.e., 5 years). Other more sensitive habitats, such as sagebrush shrublands, may require up to 50 years or longer to return to native conditions. Regardless of timeframes, it is possible that wildlife habitat lost during construction could return to pre-project conditions, thus avoiding any irreversible commitments of wildlife habitat.

3.7.6.10 Relationship Between Local Short-term Uses and Long-term Productivity

Wildlife habitat would be diminished due to local short-term and long-term uses until reclaimed areas return to mature vegetation communities. As discussed above, these temporal losses can vary in the time required to return to pre-construction conditions. This range of temporal loss is expected to be between 5 and 50 years, depending on the vegetation community. Construction and operation of any of the Project alternatives is anticipated to result in minor impacts to the short-term productivity of local migratory bird populations and sagebrush obligate wildlife species due to the loss of habitat resulting from construction and the avoidance of suitable habitats resulting from increased temporary disturbance levels. These impacts are expected to be limited to mortality resulting from collisions with Project infrastructure and avoidance due to increased levels of human activity and predation. Impacts from direct habitat loss are expected to be negligible as the total anticipated loss of wildlife habitat as a result of Project construction will be less than 1 percent of available potential habitats within the wildlife analysis area.