3.22 Migratory Birds

3.22.1 Regulatory Background

Laws, regulations, and policies that directly influence migratory bird management decisions for the TWE Project are implemented by the BLM, USFS, USFWS, WGFD, CPW (formerly CDOW), UDWR, and NDOW. Applicable laws, regulations, directives, and agreements relevant to the proposed Project include:

- MBTA (16 USC 703 et seq.)1;
- BGEPA (16 USC 668 et seq.);
- EO 13186 (66 FR 3853);
- BLM MOU WO-230-2010-04;
- USFS MOU 08-MU-1113-2400-264;
- BLM IM WY-2013-005;
- BLM WO IM-2010-156;
- BLM Manual 6500;
- 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;
- Nevada Administrative Codes 503.030, 503.035, 503.050, 503.080; and
- National Park Service Law, Policy, and Other Guidance (2006).

3.22.1.1 Migratory Bird Treaty Act

Migratory birds encompass a variety of passerine and raptor species, most of which are protected under the MBTA of 1918 (16 USC 703-711). The MBTA applies only to migratory bird species that are native to the U.S. or its territories. A native migratory bird is defined as one that is present as a result of natural biological or ecological processes. Excluded are species whose presence in the U.S. is solely the result of intentional or unintentional human-assisted introductions. Nongame species that are excluded from protection under the MBTA include the rock pigeon, Eurasian collared-dove, European starling, and house sparrow.

For all other native migratory bird species, the MBTA includes, but is not limited to, the following protections:

- A total of 1,007 species of migratory birds and their parts, including eggs, feathers, and nests, are protected.
- Proof of intent to violate the MBTA is not required for prosecution.
- The MBTA has no consultation process such as Section 7 consultation under the ESA. The MBTA does not permit incidental or unintentional take, such as that provided by Sections 7 and 10 of the ESA.

3.22.1.2 Executive Order 13186

EO 13186 was signed in January 2001. EO 13186 requires the development and implementation of MOUs with all pertinent federal agencies when those agencies "…have had or are likely to have negative effects on migratory birds protected under MBTA," in order to avoid or minimize take of migratory birds.

While the MBTA has no provision for protecting bird habitats, EO 13186 provides guidance for protecting, improving, or replacing impacted habitats.

Pursuant to EO 13186, the BLM, Western, and USFS have signed MOUs with the USFWS that outline a collaborative approach to promoting the conservation of migratory bird populations. The purpose of the MOUs is to strengthen migratory bird conservation among federal agencies 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, Western, USFS, and USFWS would contribute to the conservation of migratory birds and their habitats. Specific activities outlined in the MOUs include, but are not limited to:

- Compliance with the USFWS Bald Eagle Management Guidelines, as appropriate;
- Implementation of migratory bird conservation measures as they are developed by the USFWS;
- Working collaboratively to identify and address issues affecting migratory bird Species of Concern; and
- Evaluating the effects of proposed Project actions on migratory birds and their habitats during the NEPA process.

3.22.1.3 Bald and Golden Eagle Protection Act

In addition to the MBTA, bald and golden eagles are protected under the BGEPA (16 USC 668 et seq.). This statute prohibits anyone without a permit from committing “take” of bald and golden eagles, including their parts, nests, and eggs. “Take” is defined as the actions to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest and disturb. In 2009, the USFWS implemented two rules authorizing new permits under BGEPA.

- 50 CFR 22.26 would authorize limited “take” of bald and golden eagles where the “take” is associated with, but is not the purpose of an activity and cannot practicably be avoided.
- 50 CFR 22.27 would authorize the intentional take of eagle nests where necessary to alleviate safety hazards to people or eagles; to ensure public health and safety; where a nest prevents the use of a human-engineered structure; and when an activity, or mitigation for the activity, will provide a net benefit to eagles. Only inactive nests are allowed to be taken, except in the case of safety emergencies.

BGEPA provides the Secretary of Interior with the authority to issue eagle-take permits only if he/she is able to determine that the take is compatible with the preservation of the eagle. This take must be “…consistent with the goal of increasing or stabilizing breeding populations.” For golden eagles, current data indicate a negative population trend in the lower latitudes, such as the southwestern U.S., while data indicate a positive population trend in the northern Great Basin. These trends may simply indicate movement patterns; however, further evidence may demonstrate a lack of resiliency in golden eagle populations.

3.22.2 Data Sources

Information regarding migratory bird species and their habitats within the migratory bird analysis area was obtained from a review of existing published sources, file information from the BLM, WGFD, CPW, UDWR, NDOW, and USFWS, as well as the WYNDD, CNHP, UNHP, and NNHP database information. SWAPs also provide important information on migratory birds within the analysis area. These plans include:

- WGFD State Wildlife Action Plan (WGFD 2010);
- Colorado's Comprehensive Wildlife Conservation Strategy and Wildlife Action Plan (CDOW 2006);
- Utah Comprehensive Wildlife Conservation Strategy (Sutter et al. 2005); and
- Nevada Wildlife Action Plan (Wildlife Action Plan Team 2012).

The PIF North American Landbird Conservation Plan provides a continental synthesis of priorities and objectives that will guide landbird conservation actions at national and international scales. Together with plans for shorebirds, waterbirds, waterfowl, and other game birds, this document serves as the blueprint for continental habitat conservation under the NABCI (Rich et al. 2004). The Plan identifies PIF Species of Continental Importance, recommended conservation actions, population estimates, and continental population objectives.

The NABCI Committee is a forum of government agencies, including USFWS, private organizations, and bird initiatives established to support bird conservation objectives. NABCI has developed conservation plans for birds that provide species status assessments, define population goals, and identify habitat conservation threats, issues, objectives, and monitoring needs. These plans include the:

- PIF North American Landbird Conservation Plan (2004);
- USFWS North American Waterfowl Management Plan (2009);
- Oring et al. (2000); and
- Waterbird Conservation for the Americas: The North American Waterbird Conservation Plan (Kushlan et al. 2002).

The NABCI also has developed regional plans that provide more detailed information on population objectives and habitat needs for birds in specific landscapes (NABCI 2013).

PIF, the GBBO, and the Rocky Mountain Bird Observatory also have developed the following state bird conservation plans:

- Wyoming PIF Bird Conservation Plan (Nicholoff 2003);
- Colorado PIF Land Bird Conservation Plan (Colorado PIF 2000);
- Utah PIF Avian Conservation Strategy (Parrish et al. 2002); and
- Nevada Comprehensive Bird Conservation Plan (GBBO 2010).

The National Audubon Society recently released a comprehensive report predicting how climate change could affect the ranges of North American bird species (National Audubon Society 2014). The Audubon Birds and Climate Change Report identified species that are climate endangered and climate threatened. Climate endangered species are in danger of losing more than 50 percent of their current climatic range by 2050. Climate threatened species are in danger of losing more than 50 percent of their current climatic range by 2080 if global warming continues at its current pace. This analysis identifies the BCC species, PIF species, and raptor species that are considered climate endangered or threatened in the Audubon Birds and Climate Change Report.

Other sources of species life history information, geographic ranges, threats, and habitat associations referenced in this analysis include:

- eBird;
- Birds of North America online (Cornell Lab of Ornithology);

- National Audubon Society;
- USGS Breeding Bird Survey; and
- Nature Serve Explorer.

State Wildlife Atlases Include:

- Colorado Breeding Bird Atlas (Kingery 1998);
- Atlas of Birds, Mammals, Amphibians, and Reptiles in Wyoming (WGFD 2009);
- Atlas of Breeding Birds in Nevada (Floyd et al. 2007); and
- Vertebrate Information Compiled by the Utah Natural Heritage Program: A Progress Report (Bosworth 2003).

GIS shapefiles of raptor nest locations were obtained from AECOM (2012); Ashley National Forest (2010); BLM Cedar City FO (2010a); BLM Little Snake FO (2011a); BLM Price FO (2008a); BLM Ely FO (2007); BLM Rawlins FO (2009a, 2010b); BLM Rock Springs FO (2009b); BLM Vernal FO (2011b, 2009c); BLM; CDOW; EPG (2012); Manti-La Sal National Forest (2012); NDOW (2012a); Uinta National Forest (2011); and USFS cooperative dataset (2009). In addition, information received through correspondence with agency wildlife biologists has been incorporated, as appropriate.

3.22.3 Analysis Area

The analysis area for migratory birds represents the geographic areas of contiguous habitat that would be impacted by the proposed Project. Accordingly, this analysis area provides clear disclosure of the context of Project impacts in light of management considerations for these areas. The migratory bird analysis area (analysis area) is based in part on HUC10 watershed boundaries crossed by the Project. HUC10 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. The HUC10 watershed areas range from approximately 40,000 to 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 HUC10 watersheds in the analysis area. The analysis area also provides context for Audubon IBAs and USFWS BHCAs that would be traversed by Project alternatives.

Table 3.22-1 presents acreages of the major vegetation communities providing suitable avian habitat within the analysis area.

Table 3.22-1 Vegetation Communities Within the Migratory Bird Analysis Area

Vegetation Community	Acres Within the Migratory Bird Analysis Area[1]	Percent of the Migratory Bird Analysis Area
Agricultural Land	788,417	3.2
Aspen Forest and Woodland	682,304	2.8
Barren/Sparsely Vegetated	316,712	1.3
Cliff and Canyon	816,613	3.3
Conifer Forest	546,369	2.2
Deciduous Forest	14,082	0.1
Desert Shrubland	3,073,997	12.4
Developed/Disturbed Land[2]	990,655	4.0
Dunes	117,775	0.5
Ephemeral Wash	68,472	0.3

Table 3.22-1 Vegetation Communities Within the Migratory Bird Analysis Area

Vegetation Community	Acres Within the Migratory Bird Analysis Area[1]	Percent of the Migratory Bird Analysis Area
Grassland	1,533,945	6.2
Greasewood Flat	876,836	3.5
Herbaceous Wetland	194,940	0.8
Montane Grassland	72,084	0.3
Montane Shrubland	893,369	3.6
Open Water	155,477	0.6
Pinyon-juniper Woodland	4,123,148	16.7
Sagebrush Shrubland	6,326,232	25.6
Saltbush shrubland	2,893,155	11.7
Tundra	13,956	0.1
Woody Riparian and Wetlands	209,643	0.8
Total	24,708,181	100.0

[1] The analysis area includes suitable habitat within the HUC10 watersheds traversed by the Project.

[2] Although the developed/disturbed land cover type is not considered to be suitable avian habitat and is not included in analyses or reported disturbance acreages, some disturbance-tolerant species utilize these areas.

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

3.22.4 Baseline Description

As discussed in Section 3.5, Vegetation, 20 vegetation communities and developed/disturbed land are located within the analysis area. For the purposes of this analysis, the developed/disturbed land cover type is not considered to be suitable avian habitat and is not included in analyses or reported disturbance acreages. Nonetheless, some disturbance-tolerant avian species utilize these areas. Sagebrush shrubland, saltbush shrubland, desert shrubland, and pinyon-juniper woodland are the most common vegetation communities and account for 66 percent of the analysis area (**Table 3.22-1**).

Although all habitats are valuable to migratory bird species, select priority habitats have been identified in state SWAPs and PIF bird conservation plans. **Table 3.22-2** lists vegetation communities traversed by the Project and identifies those that have been designated as priority habitats for migratory birds in each state based on applicable SWAPs and PIF Avian Conservation Plans. Priority habitats in SWAPs and PIF Bird Conservation Plans were designated based on a number of factors including:

- The number of priority species utilizing the habitat, including those with high concern/vulnerability scores;
- The importance of the habitat to overall species diversity;
- The relative amount of habitat currently in protected status;
- The level of threat to each habitat and trends of habitat abundance and condition;
- The abundance of the habitat in each state and its value to highly habitat-specialized species (obligates); and
- Habitats that would benefit the most species in terms of protection, restoration and management.

The following vegetation communities are not designated as priority habitats in any Project region and are not included in further analysis: agricultural land, barren/sparsely vegetated land, conifer forest, dunes, deciduous forest, ephemeral wash, and tundra.

Table 3.22-2 Comparison of Priority Habitats Designated in States Traversed by the Project[1]

Habitat	Wyoming	Colorado	Utah	Nevada
Aspen Forest and Woodland	No habitat impacted in Wyoming	No habitat impacted in Colorado	SWAP – Yes PIF – No	No habitat impacted in Nevada
Cliff and Canyon	SWAP – No PIF – No	No habitat impacted in Colorado	SWAP – No PIF – No	SWAP – Yes PIF – N/A
Conifer Forest	2 acres or less of habitat impacted in Region I	No habitat impacted in Colorado	SWAP – No PIF – No	No habitat impacted in Nevada
Deciduous Forest	<1 acre of habitat impacted in Region I	No habitat impacted in Colorado	SWAP – No PIF – No	No habitat impacted in Nevada
Desert Shrubland	Not present in Region I	No habitat impacted in Colorado	SWAP – No PIF – Yes	SWAP – Yes PIF – N/A
Grassland	SWAP – No PIF – Yes	No habitat impacted in Colorado	SWAP – Yes PIF – Yes	No habitat impacted in Nevada
Greasewood Flat	SWAP – No PIF – Yes	No habitat impacted in Colorado	SWAP – No PIF – No	SWAP – No PIF – N/A
Herbaceous Wetland[2]	SWAP – Yes PIF – Yes	SWAP – Yes PIF – Yes	SWAP – Yes PIF – Yes	SWAP – Yes PIF – Yes
Montane Grassland	<1 acre of habitat impacted in Region I	No habitat impacted in Colorado	<1 acre of habitat impacted in Region III	No habitat impacted in Nevada
Montane Shrubland	2 acres or less of habitat impacted in Region I	No habitat impacted in Colorado	SWAP – Yes PIF – Yes	SWAP – Yes PIF – N/A
Open Water[2]	SWAP – Yes PIF – Yes	SWAP – Yes PIF – Yes	SWAP – Yes PIF – Yes	SWAP – Yes PIF – Yes
Pinyon-Juniper Woodland	SWAP – No PIF – No	No habitat impacted in Colorado	SWAP – No PIF – Yes	SWAP – No PIF – N/A
Sagebrush Shrubland[2]	SWAP – Yes PIF – Yes	SWAP – Yes PIF – Yes	SWAP – Yes PIF – Yes	SWAP – Yes PIF – Yes
Saltbush Shrubland	SWAP – Yes PIF – Yes	No habitat impacted in Colorado	SWAP – No PIF – No	SWAP – Yes PIF – N/A
Woody Riparian and Wetlands[2]	SWAP – Yes PIF – Yes	SWAP – Yes PIF – Yes	SWAP – Yes PIF – Yes	SWAP – Yes PIF – Yes

[1] Yes indicates that the vegetation community is designated as a priority habitat in the SWAP or PIF Bird Conservation Plan for the state. No indicates that the vegetation community is not designated as a priority habitat in the SWAP or PIF Bird Conservation Plan for the state.

[2] Vegetation community is designated as a priority habitat in every Project region where it occurs.

It should be noted that:

- The following vegetation communities are designated as priority habitats in every Project region where the habitat occurs: open water, herbaceous wetland, woody riparian and wetlands, and sagebrush shrubland.
- Although migratory bird species could occur in the barren/sparsely vegetated and dune land forms, no BCC or PIF species are particularly associated with these communities for breeding, roosting, foraging, or wintering and these habitats are not specifically analyzed.
- Additional Region I priority habitats include grassland, greasewood flat, and saltbush shrubland.

- Additional Region II priority habitats include aspen forest and woodland, grassland, montane grassland, montane shrubland, and pinyon-juniper woodland.
- Additional Region III priority habitats include cliff and canyon, desert shrubland, grassland, montane shrubland, pinyon-juniper woodland, and saltbush shrubland.
- Additional Region IV priority habitats include cliff and canyon and desert shrubland.
- In total, 13 of the 20 vegetation communities/land forms defined for the Project are designated as migratory bird priority habitats in at least one Project region.

Some priority habitats support a wide variety of bird species; others provide for fewer species but are the only habitats capable of supporting those species. Riparian and wetland habitats are the most important to avian diversity in the arid west as these areas are used as either breeding or winter habitat significantly more than other habitats (Parrish et al. 2002). Priority habitats are denoted on regional impact tables with a footnote. Priority habitats vary by region according to the state SWAP and PIF plan designations.

High priority habitats also are analyzed in terms of USFWS Bird Conservation Regions (BCRs), BHCAs, Audubon IBAs, and habitats identified in SWAPs and PIF bird conservation plans. BCRs correlate with Project regions generally as follows:

- BCR Region 9 (Great Basin) – TWE Region III;
- BCR Region 10 (Northern Rockies) – TWE Region I, Northern Terminal Siting Area;
- BCR Region 16 (Southern Rockies/Colorado Plateau) – TWE Region II; and
- BCR Region 33 (Sonoran and Mojave Deserts) – TWE Region IV, Southern Terminal and Southern Terminal Alternate Siting Area.

Other high priority avian habitats designated by land management agencies, such as State Parks, USFWS National Wildlife Refuges, BLM National Conservation Areas, BLM ACECs, and State WMAs are analyzed in Section 3.15 Special Designations. Priority habitats designated in SWAPs are incorporated in the BCC and PIF Species of Continental Importance analyses below. Potential disturbance to high priority habitats is reported by region and according to Project alternatives and other associated components.

3.22.4.1 Bird Conservation Regions

The NABCI developed BCRs as the basic units within which comprehensive bird conservation efforts were to be planned and evaluated and these units were formally adopted by the USFWS. The analysis area is located within BCRs 9 (Great Basin), 10 (Northern Rockies), 16 (Southern Rockies/Colorado Plateau), and 33 (Sonoran and Mohave Deserts). These BCRs contain a wide variety of habitats from high-elevation conifer forests and alpine tundra to low elevation desert and sagebrush shrublands. Due to this diversity of habitats, a large number of migratory birds are found year-round or during migration within these regions. The analysis area falls within two major migration corridors for bird species that travel to and from western Canada through the U.S. to Mexico and Central and South America: the Central (Region I) and Pacific (Regions II, III, and IV) Flyways (USFWS 2008).

3.22.4.2 Bird Habitat Conservation Areas

Within each BCR, BHCAs are specifically identified. BHCAs are grouped into three categories of priority, 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 priority 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; and
- Priority C: Relatively low threat, low opportunity, and/or low value as habitat statewide.

BHCAs have no official regulatory status, but are identified as important areas where state partners believe the best opportunity exists for effective conservation activities (Intermountain West Joint Venture [IWJV] 2005). Potential temporary and long-term impacts to BHCAs can result in lost opportunities for avian conservation efforts. A total of 25 BHCAs would be within the potential disturbance areas for all alternatives. A total of 47 BHCAs are partially or completely within the analysis area. BHCAs that would be within the 250-foot-wide transmission line ROW and representative avian species that may be found within them are presented in Section 3.22.5, Regional Summary, and in **Figure 3.22-1**.

3.22.4.3 Audubon Important Bird Areas

The Audubon IBA program was initiated by BirdLife International in Europe in the 1980s. Since then, over 8,000 sites in 178 countries have been identified as IBAs. As the U.S. partner of BirdLife International, the National Audubon Society administers the IBA program in the U.S. The National Audubon Society 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 suitable habitat for one or more species of birds. They include sites for breeding, wintering, and/or migrating birds. The size of an IBA may vary from a few acres to thousands of acres, but they are usually unique migratory bird habitats that stand out from the surrounding landscape. IBAs may include public and/or private lands and some are protected by local, state, or national regulations (National Audubon Society 2011).

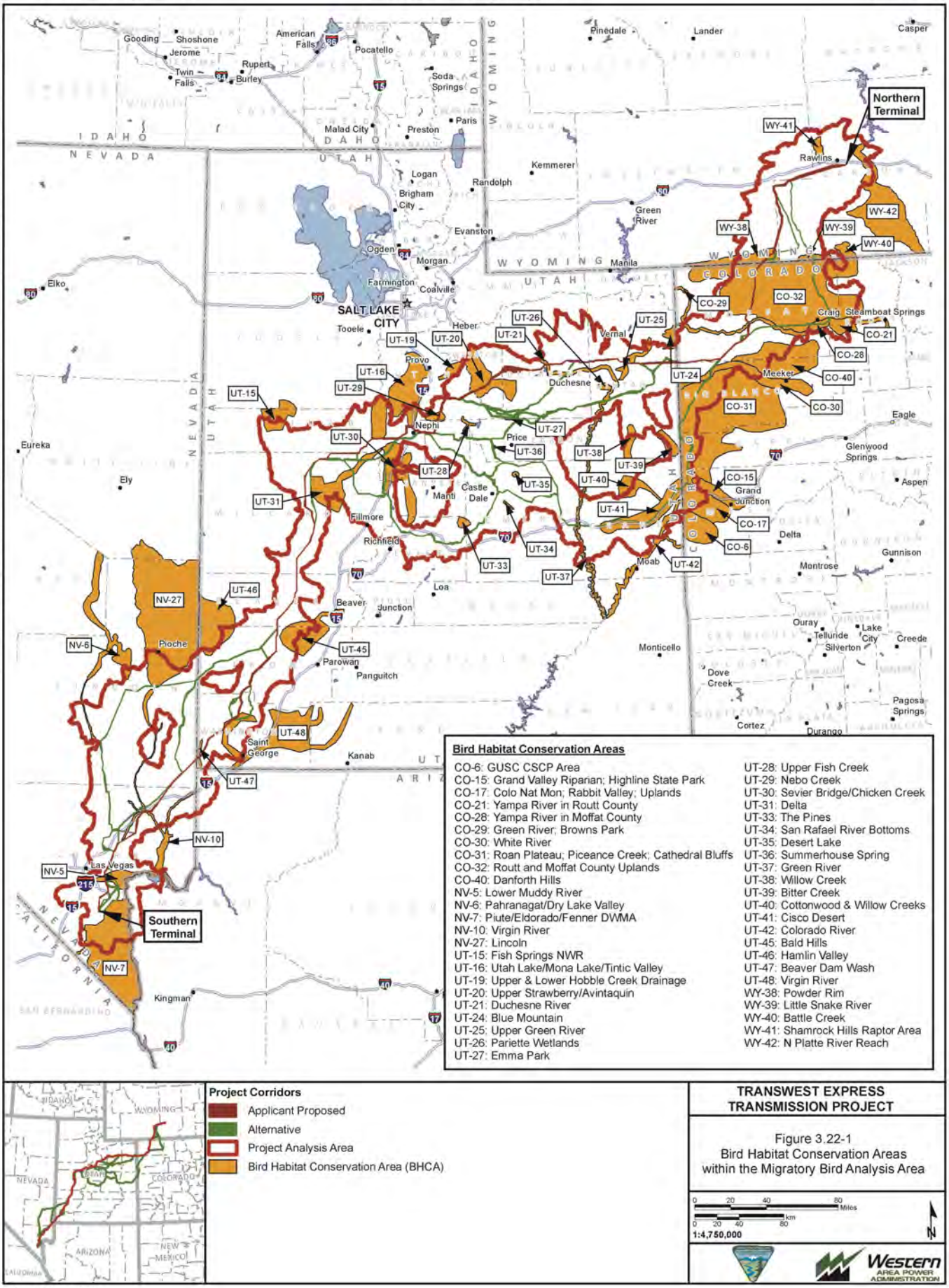
To qualify as an IBA, a site must satisfy at least one of the following criteria. The site must support:

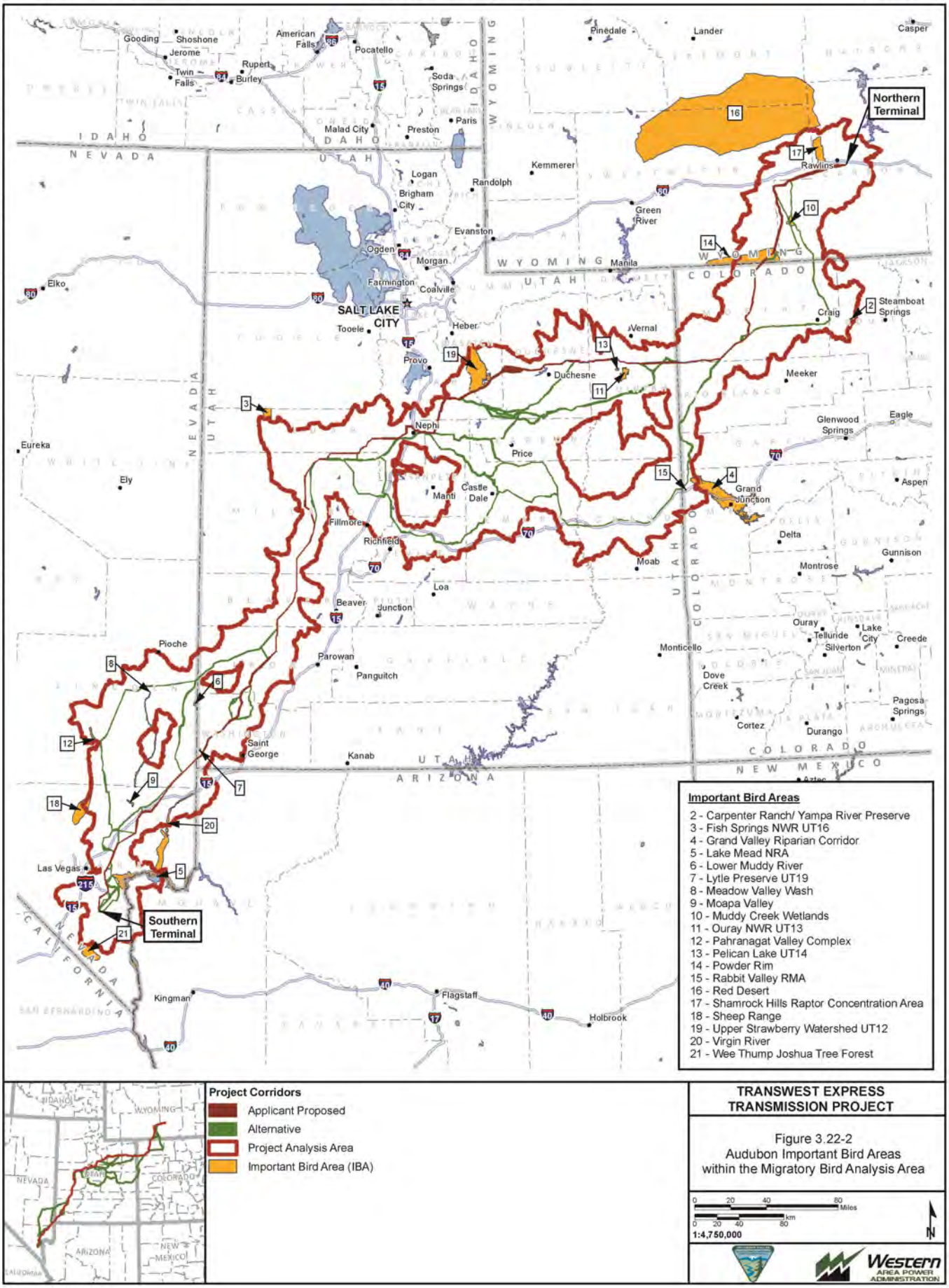
- Species of conservation concern (e.g., threatened and endangered species);
- Restricted-range species (species vulnerable because they are not widely distributed);
- Species that are vulnerable because their populations are concentrated in one general habitat type or biome; or
- Species or groups of 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 analysis area in each Project region are presented in Section 3.22.5, Regional Summary. **Figure 3.22-2** displays IBAs within the analysis area.

3.22.4.4 Migratory Bird Species

A variety of migratory bird species inhabits the vegetation communities present throughout the analysis area. Increased species diversity generally occurs in areas exhibiting greater vegetation structure, soil moisture, and available open water, such as wetlands and riparian areas. Species that inhabit wetland and riparian habitats are generally limited to the perennial and intermittent drainages, marshes, and the margins of reservoirs, lakes, and ponds or in the immediate vicinity of these areas.


Northern Terminal
Southern Terminal
SALT LAKE CITY
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; Browns 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-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-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 3.22-1
Bird Habitat Conservation Areas within the Migratory Bird Analysis Area
1:4,750,000
Western AREA POWER ADMINISTRATION
Exported On: 2/10/2015


Important Bird Areas
2 - Carpenter Ranch/ Yampa River Preserve
3 - Fish Springs NWR UT16
4 - Grand Valley Riparian Corridor
5 - Lake Mead NRA
6 - Lower Muddy River
7 - Lytle Preserve UT19
8 - Meadow Valley Wash
9 - Moapa Valley
10 - Muddy Creek Wetlands
11 - Ouray NWR UT13
12 - Pahranagat Valley Complex
13 - Pelican Lake UT14
14 - Powder Rim
15 - Rabbit Valley RMA
16 - Red Desert
17 - Shamrock Hills Raptor Concentration Area
18 - Sheep Range
19 - Upper Strawberry Watershed UT12
20 - Virgin River
21 - Wee Thump Joshua Tree Forest
Northern Terminal
Southern Terminal
SALT LAKE CITY
Project Corridors
Applicant Proposed
Alternative
Project Analysis Area
Important Bird Area (IBA)
TRANSWEST EXPRESS TRANSMISSION PROJECT
Figure 3.22-2
Audubon Important Bird Areas within the Migratory Bird Analysis Area
1:4,750,000
Western AREA POWER ADMINISTRATION
Exported On: 2/6/2015

A number of species are considered upland game birds or waterfowl and are analyzed in Section 3.7, Wildlife. Species designated as federally endangered, threatened, proposed, or candidate; BLM sensitive; USFS sensitive; or state-listed as threatened or endangered are listed in Appendix G and analyzed in Section 3.8, Special Status Wildlife Species. **Table G-2** in **Appendix G** provides a description of the geographic range, habitat requirements, and potential for occurrence for special status species. Bald and golden eagles are protected under the BGEPA and the MBTA and are considered sensitive species by various BLM FOs and state wildlife agencies traversed by Project alternatives. Consequently, eagles are analyzed in Section 3.8, Special Status Wildlife Species, as well as in this section as BCC or PIF species. In Section 3.7, Wildlife, USFS Management Indicator Species are analyzed in terms of their habitat associations within the respective forests for which they are designated as such.

A wide variety of passerine species occurs within the analysis area throughout the year; however, they are most abundant during migration and the breeding season. Migratory bird species that are further classified as federally listed, candidate, proposed, state-listed, BLM Sensitive, or USFS Sensitive are discussed in **Appendix G**, **Table G-2**, and Section 3.8, Special Status Wildlife Species. BCC and PIF species that could occur within the analysis area are presented by Region below.

Raptor species that could occur as residents or migrants within the analysis area include eagles, hawks, falcons, accipiters, owls, and kites (eBird 2014; Faulkner 2010; Floyd et al. 2007; Herron et al. 1985; Kingery 1998; Stokes and Stokes 1996; Orabona et al. 2012). Raptor species that are further classified as federally listed, candidate, proposed, state-listed, BLM Sensitive, or USFS Sensitive are discussed in **Appendix G**, **Table G-2**, and Section 3.8, Special Status Wildlife Species. Raptor species known or suspected to occur in the four Project regions are presented in regional analysis tables below. A total of 23 diurnal raptor species and 14 owl species were reported on the eBird website as being observed in the 23 counties containing the analysis area. These documented observations can be used in conjunction with GIS shapefiles of known raptor nest locations and Natural Heritage data records to provide an understanding of raptor species diversity within the analysis area.

In addition, eBird records exist for all migratory bird species for which a volunteer observer entered data regarding his or her observations. The total number of species reported in an eBird record may overestimate or underestimate the actual number of species due to variability in sampling effort by area. Factors involved in eBird data recording include observer bias and ability, site accessibility, proximity to towns and cities, and observer willingness to report observations. Some species may inhabit a particular area, but not be detected and/or reported. The following provides a summary of eBird species observations by county.

- Carbon County, Wyoming — 251 total species; 15 diurnal raptor species; 8 owl species
- Sweetwater County, Wyoming — 254 total species; 15 diurnal raptor species; 5 owl species
- Garfield County, Colorado — 235 total species; 15 diurnal raptor species; 8 owl species
- Mesa County, Colorado — 330 total species; 17 diurnal raptor species; 8 owl species
- Moffat County, Colorado — 253 total species; 16 diurnal raptor species; 8 owl species
- Rio Blanco County, Colorado — 220 total species; 13 diurnal raptor species; 8 owl species
- Routt County, Colorado — 256 total species; 16 diurnal raptor species; 6 owl species
- Beaver County, Utah — 231 total species; 15 diurnal raptor species; 4 owl species
- Carbon County, Utah — 209 total species; 14 diurnal raptor species; 6 owl species
- Duchesne County, Utah — 256 total species; 15 diurnal raptor species; 10 owl species
- Emery County, Utah — 229 total species; 14 diurnal raptor species; 7 owl species
- Grand County, Utah — 252 total species; 16 diurnal raptor species; 8 owl species

- Iron County, Utah 273 total species; 17 diurnal raptor species; 9 owl species
- Juab County, Utah 304 total species; 15 diurnal raptor species; 8 owl species
- Millard County, Utah 260 total species; 15 diurnal raptor species; 7 owl species
- Sanpete County, Utah 218 total species; 15 diurnal raptor species; 5 owl species
- Sevier County, Utah 211 total species; 15 diurnal raptor species; 5 owl species
- Uintah County, Utah 266 total species; 17 diurnal raptor species; 8 owl species
- Utah County, Utah 320 total species; 17 diurnal raptor species; 9 owl species
- Wasatch County, Utah 254 total species; 16 diurnal raptor species; 8 owl species
- Washington County, Utah 368 total species; 20 diurnal raptor species; 11 owl species
- Clark County, Nevada 409 total species; 22 diurnal raptor species; 9 owl species
- Lincoln County, Nevada 325 total species; 23 diurnal raptor species; 7 owl species

A total of 14 raptor species have been reported in all counties traversed by Project alternatives. These include the prairie falcon, peregrine falcon, merlin, American kestrel, rough-legged hawk, red-tailed hawk, Swainson's hawk, bald eagle, Cooper's hawk, sharp-shinned hawk, northern harrier, golden eagle, osprey, and great horned owl. Other species reported in counties traversed by Project alternatives include the ferruginous hawk (22 counties), northern goshawk (18 counties), northern saw-whet owl (18 counties), short-eared owl (17 counties), long-eared owl (21 counties), burrowing owl (19 counties), western screech-owl (17 counties), flammulated owl (12 counties), northern pygmy owl (17 counties), and barn owl (14 counties). Other species observed in counties traversed by Project alternatives include the Mississippi kite (3 counties), white-tailed kite (3 counties), common black-hawk (4 counties), Harris's hawk (2 counties), zone-tailed hawk (6 counties), red-shouldered hawk (5 counties), broad-winged hawk (8 counties), crested caracara (1 county), boreal owl (6 counties), snowy owl (1 county), spotted owl (3 counties), elf owl (3 counties), and eastern screech-owl (1 county).

USFWS Birds of Conservation Concern

The 1988 amendment to the Fish and Wildlife Conservation Act mandates the USFWS to identify species, subspecies, and populations of all nongame migratory birds that, without additional conservation actions, are likely to become candidates for listing under the ESA of 1973. A list of BCC was developed by the USFWS as a result of the 1988 amendment. **Table 3.22-3** presents the BCC species that could occur in the analysis area. 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). BCC species, their habitat associations, and potential for occurrence in each of the four Project regions are presented in Section 3.22-5, Regional Summary. Migratory bird species are analyzed based on their nesting, foraging, and winter habitat requirements. Many species designated as special status, BCC, or PIF also are identified in the SWAPs as Species of Greatest Conservation Concern (SGCN, SCP). BCC and PIF species that also are designated as state Species of Greatest Conservation Concern are identified in **Table 3.22-3**.

Partners in Flight Species of Continental Importance for the U.S. and Canada

The National 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 prior to migrating south to Mexico, Central and South America, and the Caribbean in the winter months (Colorado PIF 2000; Neel 1999; Nicholoff 2003; Utah Steering Committee IWJV 2005). **Table 3.22-3** presents the PIF species that could occur in the analysis area. PIF species, their habitat associations, and potential for occurrence in each of the four Project regions are presented in Section 3.22.5, Regional Summary.

Table 3.22-3 USFWS Birds of Conservation Concern and Partners in Flight Species of Continental Importance for the U.S. and Canada

Common Name (Scientific Name)	Status[1]	BCR in which BCC Species are Designated				Habitat Associations[2]			Approximate Breeding Dates[3]	Potential for Occurrence within Regional Migratory Bird Analysis Areas[4]				
		Region 9 Great Basin (TWE Region III)	Region 10 Northern Rockies (TWE Region I and Northern Terminal Siting Area)	Region 16 Southern Rockies Colorado Plateau (TWE Region II)	Region 33 Sonoran and Mojave Deserts (TWE Region IV and Southern Terminal Siting Area)	Nesting Habitat	Foraging Habitat	Winter Habitat		Region I	Region II	Region III	Region IV	Carried Forward in Detailed Analysis
Eared Grebe[8] (*Podiceps nigricollis*)	BCC; CO - SGCN	X				Herbaceous wetland	Herbaceous wetland, open water	Migratory	May 10 – August 31	Low	Low	Moderate	High	Yes
American Bittern (*Botaurus lentiginosus*)	BCC; CO –SGCN; NV – SCP; WY SGCN, Tier II			X		Herbaceous wetland	Herbaceous wetland, open water	Migratory	April 11 – August 10	Low	Low	Low	Low	No[6]
Least Bittern[8] (*Ixobrychus exilis*)	BCC; NV - SCP				X	Herbaceous wetland	Herbaceous wetland	Migratory	April 20 – August 10	Low	Low	Low	Low	Yes
California Condor (*Gymnogyps californianus*)	PIF; Endangered					Federally listed species are analyzed in detail in Section 3.8, Special Status Wildlife Species. Breeding begins mid-February and successful nesting takes 2 years.								
Bald Eagle[8] (*Haliaeetus leucocephalus*)	BCC; PIF; SSS; CO-T; UT SGCN, Tier I; NV-E; WY SGCN, Tier I	X	X	X	X	Woody riparian and wetlands	Primarily open water, although species will scavenge in a variety of other habitats	Variable migration depending on the age of the individual, location of breeding site, severity of climate at the breeding site, and year-round food availability. Woody riparian and wetlands	January 1 – August 10	Moderate	High	High	Low	Yes
Swainson's Hawk[8] (*Buteo swainsoni*)	BCC; SSS; CO –SGCN; WY SGCN, Tier II		X			Agricultural land, grassland, montane grassland	Agricultural land, desert shrubland, grassland, montane grassland, montane shrubland, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland	Migratory	April 14 – August 20	Low	High	High	Low	Yes
Ferruginous Hawk[8] (*Buteo regalis*)	BCC; SSS; CO –SGCN; NV – SCP; UT SGCN, Tier II; WY SGCN, Tier I	X	X	X		Cliff and canyon, grassland, montane grassland	Agricultural land, desert shrubland, grassland, montane grassland, montane shrubland, sagebrush shrubland, saltbush shrubland	Possibly a short-distance migrant or sedentary in the analysis area. Agricultural land, grassland, montane grassland	March 5 – July 31	High	High	High	Low	Yes
Rough-legged Hawk (*Buteo lagopus*)	PIF					Species does not breed in analysis area.	Agricultural land, grassland, montane grassland	Migratory. Agricultural land, grassland, montane grassland	Species does not breed in the analysis area.	Low	Low	Low	Low[10]	Yes
Golden Eagle[8] (*Aquila chrysaetos*)	BCC; SSS; CO –SGCN; NV - SCP	X		X		Cliff and canyon, grassland, montane grassland, pinyon-juniper woodland	Agricultural land, cliff and canyon, desert shrubland, grassland, montane grassland, montane shrubland, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, tundra	Short-to medium distance partial migrant. Agricultural land, desert shrubland, grassland, montane grassland, montane shrubland, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland	February 1 – August 15	High	Low	High	Moderate	Yes
Gyrfalcon (*Falco rusticolus*)	PIF					Does not breed in analysis area	Agricultural land, grassland, montane grassland, tundra	Migratory. Analysis area is at the southern limit of occasional winter occurrence. Agricultural land, grassland, montane grassland	Species does not breed in analysis area.	Low	None	None	None	No[6]

Table 3.22-3 USFWS Birds of Conservation Concern and Partners in Flight Species of Continental Importance for the U.S. and Canada

Common Name (Scientific Name)	Status[1]	BCR in which BCC Species are Designated				Habitat Associations[2]			Approximate Breeding Dates[3]	Potential for Occurrence within Regional Migratory Bird Analysis Areas[4]				
		Region 9 Great Basin (TWE Region III)	Region 10 Northern Rockies (TWE Region I and Northern Terminal Siting Area)	Region 16 Southern Rockies Colorado Plateau (TWE Region II)	Region 33 Sonoran and Mojave Deserts (TWE Region IV and Southern Terminal Siting Area)	Nesting Habitat	Foraging Habitat	Winter Habitat		Region I	Region II	Region III	Region IV	Carried Forward in Detailed Analysis
Peregrine Falcon[9] (*Falco peregrinus*)	BCC; PIF; SSS; CO –SGCN; NV-E; UT SGCN, Tier III; WY SGCN, Tier II	X	X	X	X	Cliff and canyon	Cliff and canyon, desert shrubland, grassland, herbaceous wetland, montane grassland, montane shrubland, pinyon-juniper woodland, saltbush shrubland, woody riparian and wetlands	Migratory	March 20 – August 15	Low	Moderate	Moderate	Moderate	Yes
Prairie Falcon[8] (*Falco mexicanus*)	BCC; CO –SGCN; NV - SCP			X	X	Cliff and canyon	Cliff and canyon, desert shrubland, grassland, montane grassland, montane shrubland, sagebrush shrubland, saltbush shrubland	Partially migratory depending on prey availability throughout the year. Grassland, montane grassland	March 10 – July 25	Low	Moderate	Moderate	Moderate	Yes
Greater Sage-grouse (*Centrocercus urophasianus*)	BCC; PIF; Candidate	X				Species is a candidate for federal listing and is analyzed in detail in Section 3.8, Special Status Wildlife Species. The breeding season is from March 1 – June 30.								
Gunnison Sage-grouse (*Centrocercus minimus*)	Proposed; BCC; SSS; CO - SGCN			X		Species does not occur in the analysis area and is not carried forward in detailed analysis.			March 1 – August 31	None	None	None	None	No
Dusky Grouse[9] (*Dendragapus obscurus*)	PIF; CO –SGCN; NV - SCP					Aspen forest and woodland, conifer forest, deciduous forest, montane shrubland	Aspen forest and woodland, conifer forest, deciduous forest, montane shrubland	Short-distance migrant from open breeding grounds to denser conifer forest. Aspen forest and woodland, conifer forest, deciduous forest	March 21 – September 10	Low	Low	Low	None	Yes
Columbian Sharp-tailed Grouse[8] (*Tympanuchus phasianellus columbianus*)	PIF; SSS; CO –SGCN; NV – SCP; UT SGCN, Tier II; WY SGCN, Tier II					Montane shrubland, sagebrush shrubland	Grassland, greasewood flat, herbaceous wetland, montane grassland, montane shrubland, sagebrush shrubland, saltbush shrubland, woody riparian and wetlands	Short-distance migrant from breeding grounds to woody habitats, depending on snow. Herbaceous wetland, montane shrubland, sagebrush shrubland, saltbush shrubland, woody riparian and wetlands	March 1 – August 31	Low	Low	None	None	Yes
Gambel's Quail (*Callipepla gambelii*)	PIF; UT SGCN, Tier III					Desert shrubland	Agricultural land, desert shrubland, ephemeral wash, grassland, greasewood flat	Non-migratory. Agricultural land, desert shrubland, ephemeral wash, grassland, greasewood flat	March 1 – July 31 The species may produce two clutches.	Low	Low	High	High	Yes
Snowy Plover (Western) (*Charadrius alexandrines*)	BCC; SSS; CO –SGCN; NV - SCP	X		X	X	Suitable breeding habitat for this species is not present or is extremely limited within the analysis area. This species is not recommended for further analysis.			May 1 – August 31 The species may produce two clutches.	None	None	None	Moderate	No
Mountain Plover[9] (*Charadrius montanus*)	BCC; SSS; CO –SGCN; UT SGCN, Tier III; WY SGCN, Tier I			X	X	Agricultural land, grassland, montane grassland	Agricultural land, grassland, montane grassland	Migratory	April 10 – July 10 The species produces two clutches. The male incubates one and the female incubates the other at the same time.	High	Moderate	None	None	Yes
Upland Sandpiper (*Bartramia longicauda*)	BCC; CO –SGCN; WY SGCN, Tier II		X			Grassland	Grassland	Migratory	May 1 – July 10	Low	None	None	None	Yes
Long-billed Curlew[8] (*Numenius americanus*)	BCC; SSS; CO –SGCN; UT SGCN, Tier II; NV – SCP; WY SGCN, Tier II	X	X	X	X	Grassland	Agricultural land, grassland, herbaceous wetland, open water, woody riparian and wetlands	Migratory	April 11 – July 20	Low	High	Moderate	Low	Yes

Table 3.22-3 USFWS Birds of Conservation Concern and Partners in Flight Species of Continental Importance for the U.S. and Canada

Common Name (Scientific Name)	Status[1]	BCR in which BCC Species are Designated				Habitat Associations[2]			Approximate Breeding Dates[3]	Potential for Occurrence within Regional Migratory Bird Analysis Areas[4]				
		Region 9 Great Basin (TWE Region III)	Region 10 Northern Rockies (TWE Region I and Northern Terminal Siting Area)	Region 16 Southern Rockies Colorado Plateau (TWE Region II)	Region 33 Sonoran and Mojave Deserts (TWE Region IV and Southern Terminal Siting Area)	Nesting Habitat	Foraging Habitat	Winter Habitat		Region I	Region II	Region III	Region IV	Carried Forward in Detailed Analysis
Band-tailed Pigeon[5] (*Patagioenas fasciata*)	PIF					Species is analyzed as an upland game bird in Section 3.7, Wildlife.			April 21 – September 30 The species may product two or three clutches.	Low	Low	Low	Low	Yes
Western Yellow-billed Cuckoo[1] (*Coccyzus americanus*)	Threatened; BCC	X	X	X	X	Species is federally listed as threatened and is analyzed in detail in Section 3.8, Special Status Wildlife Species. The breeding season is from March 15 – October 15. The species may produce two clutches.								
Flammulated Owl (*Plisoscops flammeolus*)	BCC; PIF; SSS; CO –SGCN; NV - SCP	X	X	X	X	Aspen forest and woodland, conifer forest	Aspen forest and woodland, conifer forest	Migratory	May 11 – August 10	Low	Moderate	Moderate	None	Yes
Mexican Spotted Owl (*Strix occidentalis lucida*)	PIF; Threatened					Species is federally listed as threatened and is analyzed in detail in Section 3.8, Special Status Wildlife Species. The breeding season is from March 10 – July 31. The species produces one clutch per season and may not breed every year.								
Short-eared Owl[8] (*Asio flammeus*)	PIF; SSS; CO –SGCN; NV – SCP; UT SGCN, Tier II; WY SGCN, Tier II					Grassland	Agricultural land, grassland, herbaceous wetland, montane grassland	Partial migrant; routes are not well documented. Agricultural land, grassland, herbaceous wetland	March 15 – August 10	Moderate	Moderate	Low	None	Yes
Burrowing Owl[8] (*Athene cunicularia*)	BCC; SSS; CO – T; NV – SCP; UT SGCN, Tier II; WY SGCN, Tier I			X	X	Primarily in burrowing mammal habitats in: Agricultural land, desert shrubland, grassland, montane grassland, sagebrush shrubland, saltbush shrubland	Agricultural land, desert shrubland, grassland, montane grassland, sagebrush shrubland, saltbush shrubland	Migratory	April 1 – August 10	High	High	High	High	Yes
Black Swift (*Cypseloides niger*)	BCC; PIF; CO – SGCN; UT SGCN, Tier II	X	X			Cliff and canyon, requires waterfalls or dripping canyons	Aspen forest and woodland, conifer forest, deciduous forest, montane shrubland	Migratory	June 15 – October.	Low	Low	None	None	Yes
White-throated Swift[9] (*Aeronautes saxatalis*)	PIF; CO - SGCN					Cliff and canyon	Aspen forest and woodland, conifer forest, deciduous forest, montane shrubland	Migratory	May 1 – August 25 The species may produce two clutches.	Low	Low	Low	Moderate	Yes
Costa's Hummingbird (*Calypte costae*)	BCC; PIF				X	Desert shrubland	Desert shrubland, ephemeral wash	Migratory Desert shrubland, ephemeral wash	March 15 – May 1	None	None	Low	Moderate	Yes
Calliope Hummingbird[9] (*Stellula calliope*)	BCC; PIF	X	X			Conifer forest	Conifer forest, deciduous forest, montane grassland, montane shrubland, woody riparian and wetlands	Migratory	May 15 – August 1	Low	Low	Low	None	Yes
Lewis's Woodpecker[9] (*Melanerpes lewis*)	BCC; PIF; SSS; CO –SGCN; NV – SCP; UT SGCN, Tier II; WY SGCN, Tier II	X	X	X		Conifer forest, especially burned forest areas, woody riparian and wetlands	Aspen forest and woodland, conifer forest, deciduous forest, pinyon-juniper woodland, woody riparian and wetlands	Variable migration in analysis area, depending on latitude, year, and individual. Species is an opportunistic forager. Aspen forest and woodland, conifer forest, deciduous forest, pinyon-juniper woodland, woody riparian and wetlands	April 15 – August 5	Low	High	Low	None	Yes
Gila Woodpecker[9] (*Melanerpes uropygialis*)	BCC				X	Desert shrubland	Desert shrubland, woody riparian and wetlands	Non-migratory Desert shrubland, woody riparian and wetlands	April 1 – June 30 The species may produce two clutches.	None	None	None	Low	Yes
Williamson's Sapsucker[8] (*Sphyrapicus thyroideus*)	BCC; PIF; CO –SGCN; UT SGCN, Tier III	X	X			Conifer forest	Aspen forest and woodland, conifer forest, deciduous forest	Migratory	May 1 – August 15	Moderate	Moderate	Moderate	None	Yes

Table 3.22-3 USFWS Birds of Conservation Concern and Partners in Flight Species of Continental Importance for the U.S. and Canada

Common Name (Scientific Name)	Status[1]	BCR in which BCC Species are Designated				Habitat Associations[2]			Approximate Breeding Dates[3]	Potential for Occurrence within Regional Migratory Bird Analysis Areas[4]				
		Region 9 Great Basin (TWE Region III)	Region 10 Northern Rockies (TWE Region I and Northern Terminal Siting Area)	Region 16 Southern Rockies Colorado Plateau (TWE Region II)	Region 33 Sonoran and Mojave Deserts (TWE Region IV and Southern Terminal Siting Area)	Nesting Habitat	Foraging Habitat	Winter Habitat		Region I	Region II	Region III	Region IV	Carried Forward in Detailed Analysis
Red-naped Sapsucker[8] (*Sphyrapicus nuchalis*)	PIF; CO - SGCN					Aspen forest and woodland, conifer forest, deciduous forest, woody riparian and wetlands	Aspen forest and woodland, conifer forest, deciduous forest, woody riparian and wetlands	Short-distance migrant. Aspen forest and woodland, conifer forest, deciduous forest, woody riparian and wetlands	April 30 – August 31	Low	Low	Low	Low	Yes
Gilded Flicker[9] (*Colaptes chrysoides*)	BCC; NV - SCP				X	Desert shrubland (saguaro cactus), woody riparian and wetlands	Desert shrubland (saguaro cactus), woody riparian and wetlands	Non-migratory Desert shrubland (saguaro cactus), ephemeral wash, woody riparian and wetlands	April 1 – June 15	None	None	None	Low	Yes
Olive-sided Flycatcher (*Contopus cooperi*)	BCC; PIF; CO –SGCN; NV - SCP		X			Conifer forest	Conifer forest	Migratory	June 1 – July 31	Low	Low	Low	Low[10]	Yes
Willow Flycatcher[9] (*Empidonax traillii*)	BCC; PIF; NV – SCP; WY SGCN, Tier III	X	X	X		Woody riparian and wetlands	Woody riparian and wetlands	Migratory	June 5 – August 10	Low	Low	Low	Low	Yes
Gray Flycatcher[9] (*Empidonax wrightii*)	PIF; CO - SGCN					Pinyon-juniper woodland, sagebrush shrubland	Montane shrubland, pinyon-juniper woodland, sagebrush shrubland	Migratory	May 15 – August 1 The species may produce two clutches.	Low	Moderate	Moderate	Low[10]	Yes
Dusky Flycatcher[9] (*Empidonax oberholseri*)	PIF; CO - SGCN					Montane shrubland, pinyon-juniper woodland, sagebrush shrubland, woody riparian and wetlands	Montane shrubland, pinyon-juniper woodland, sagebrush shrubland, woody riparian and wetlands	Migratory	May 5 – August 5	Low	Low	Low	None	Yes
Loggerhead Shrike (*Lanius ludovicianus*)	BCC; SSS; CO –SGCN; NV - SCP	X	X			Agricultural land, grassland, greasewood flat, montane shrubland, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, woody riparian and wetlands	Agricultural land, grassland, greasewood flat, montane shrubland, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, woody riparian and wetlands	Non-migratory in the analysis area. Agricultural land, grassland, greasewood flat, montane shrubland, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, woody riparian and wetlands	April 10 – August 20 The species may produce two or three clutches.	High	High	High	High	Yes
Northern Shrike (*Lanius excubitor*)	PIF					Species does not breed in the analysis area.	Agricultural land, conifer forest, deciduous forest, montane shrubland, sagebrush shrubland, woody riparian and wetlands	Migratory Agricultural land, conifer forest, deciduous forest, montane shrubland, sagebrush shrubland, woody riparian and wetlands	Species does not breed in the analysis area.	Low	Low	None	None	Yes
Bell's Vireo[9] (*Vireo bellii*)	BCC; PIF; NV – SCP; UT SGCN, Tier III				X	Woody riparian and wetlands	Woody riparian and wetlands	Migratory	April 1 – July 15 The species may produce two clutches.	None	None	Low	Low	Yes
Gray Vireo[9] (*Vireo vicinior*)	BCC; PIF; CO– SGCN; UT SGCN, Tier III			X	X	Desert shrubland, montane shrubland, pinyon-juniper woodland	Desert shrubland, ephemeral wash, montane shrubland, pinyon-juniper woodland	Migratory	May 15 – July 25	Low	Moderate	Moderate	Low	Yes
Gray Jay (*Perisoreus canadensis*)	PIF					Conifer forest	Conifer forest	Non-migratory Conifer forest	February 21 – July 10	Low	Low	None	None	Yes
Steller's Jay (*Cyanocitta stelleri*)	PIF					Aspen forest and woodland, conifer forest, deciduous forest, montane shrubland	Aspen forest and woodland, conifer forest, deciduous forest, montane shrubland	Non-migratory Aspen forest and woodland, conifer forest, deciduous forest, montane shrubland	April 1 – August 25	Moderate	Moderate	Moderate	None	Yes
Western Scrub-jay (*Aphelocoma californica*)	PIF; WY SGCN, Tier II					Montane shrubland, pinyon-juniper woodland	Montane shrubland, pinyon-juniper woodland	Non-migratory Montane shrubland, pinyon-juniper woodland	April 5 – August 25	Moderate	Moderate	Moderate	None	Yes

Table 3.22-3 USFWS Birds of Conservation Concern and Partners in Flight Species of Continental Importance for the U.S. and Canada

Common Name (Scientific Name)	Status[1]	BCR in which BCC Species are Designated				Habitat Associations[2]			Approximate Breeding Dates[3]	Potential for Occurrence within Regional Migratory Bird Analysis Areas[4]				
		Region 9 Great Basin (TWE Region III)	Region 10 Northern Rockies (TWE Region I and Northern Terminal Siting Area)	Region 16 Southern Rockies Colorado Plateau (TWE Region II)	Region 33 Sonoran and Mojave Deserts (TWE Region IV and Southern Terminal Siting Area)	Nesting Habitat	Foraging Habitat	Winter Habitat		Region I	Region II	Region III	Region IV	Carried Forward in Detailed Analysis
Pinyon Jay[9] (*Gymnorhinus cyanocephalus*)	BCC; CO –SGCN; NV - SCP	X		X		Conifer forest, montane shrubland, pinyon-juniper woodland	Conifer forest, montane shrubland, pinyon-juniper woodland	Non-migratory Conifer forest, montane shrubland, pinyon-juniper woodland	February 21 – August 20	Moderate	Moderate	Moderate	None	Yes
Clark's Nutcracker[8] (*Nucifraga Columbiana*)	PIF					Conifer forest, pinyon-juniper woodland	Conifer forest, pinyon-juniper woodland	Altitudinal migrant Conifer forest, pinyon-juniper woodland	March 1 – August 20	Low	Low	Low	None	Yes
Juniper Titmouse[9] (*Baeolophus ridgwayi*)	BCC; CO –SGCN; WY SGCN, Tier II			X		Pinyon-juniper woodland	Pinyon-juniper woodland	Non-migratory Pinyon-juniper woodland	May 1 – August 10	Moderate	Moderate	Moderate	None	Yes
Verdin (*Auriparus flaviceps*)	PIF					Desert shrubland	Desert shrubland, ephemeral wash	Non-migratory Desert shrubland, ephemeral wash	February 21 – July 30 The species may produce two clutches.	None	None	Moderate	High	Yes
Cactus Wren (*Campylorhynchus brunneicapillus*)	PIF					Desert shrubland	Desert shrubland, ephemeral wash	Non-migratory Desert shrubland, ephemeral wash	March 1 – August 15 The species may product two or three clutches.	None	None	High	High	Yes
Winter Wren[9] (*Troglodytes troglodytes*)	PIF					Aspen forest and woodland, conifer forest, deciduous forest, montane shrubland, woody riparian and wetlands	Aspen forest and woodland, conifer forest, deciduous forest, montane shrubland, woody riparian and wetlands	Migratory	March 30 – July 15	None	Low	None	None	Yes
Veery[9] (*Catharus fuscescens*)	BCC; CO - SGCN			X		Woody riparian and wetlands	Woody riparian and wetlands	Migratory	June 11 – August 5	Low	None	None	None	Yes
Black-tailed Gnatcatcher (*Polioptila melanura*)	PIF					Desert shrubland	Desert shrubland, ephemeral wash	Non-migratory Desert shrubland, ephemeral wash	February 15 – August 15 The species may produce two clutches.	None	None	Moderate	High	Yes
Mountain Bluebird[9] (*Sialia currucoides*)	PIF					Agricultural land, aspen forest and woodland, montane grassland, montane shrubland, pinyon-juniper woodland	Agricultural land, aspen forest and woodland, montane grassland, montane shrubland, pinyon-juniper woodland	Migratory	April 5 – August 10 The species may product two or three clutches.	Low	Low	Moderate	Low[10]	Yes
Sage Thrasher[9] *(Oreoscoptes montanus)*	BCC; SSS; NV - SCP; UT SGCN, Tier III; WY SGCN, Tier II	X	X			Sagebrush shrubland	Sagebrush shrubland	Short-distance migrant Sagebrush shrubland	May 10 – August 5 The species may produce two clutches.	High	Low	Low	Low[10]	Yes
Bendire's Thrasher[9] (*Toxostoma bendirei*)	BCC; PIF; NV – SCP; UT SGCN, Tier III			X	X	Agricultural land, desert shrubland, ephemeral wash, grassland, pinyon-juniper woodland, sagebrush shrubland	Agricultural land, desert shrubland, ephemeral wash, grassland, pinyon-juniper woodland, sagebrush shrubland	Migratory	April 1 – July 31 The species may produce two clutches.	None	None	Low	Low	Yes
Crissal Thrasher (*Toxostoma crissale*)	PIF; UT SGCN, Tier III					Desert shrubland, sagebrush shrubland, saltbush shrubland, woody riparian and wetlands	Desert shrubland, ephemeral wash, sagebrush shrubland, saltbush shrubland, woody riparian and wetlands	Non-migratory Desert shrubland, ephemeral wash, sagebrush shrubland, saltbush shrubland, woody riparian and wetlands	February 1 – July 15 The species may produce two clutches.	None	None	Moderate	High	Yes
Le Conte's Thrasher[9] (*Toxostoma lecontei*)	BCC; PIF; SSS; NV - SCP				X	Desert shrubland, woody riparian and wetlands	Desert shrubland, ephemeral wash, woody riparian and wetlands	Non-migratory Desert shrubland, ephemeral wash, woody riparian and wetlands	March 1 – July 1 The species may produce two or three clutches.	None	None	Moderate	High	Yes

Table 3.22-3 USFWS Birds of Conservation Concern and Partners in Flight Species of Continental Importance for the U.S. and Canada

Common Name (Scientific Name)	Status[1]	BCR in which BCC Species are Designated				Habitat Associations[2]			Approximate Breeding Dates[3]	Potential for Occurrence within Regional Migratory Bird Analysis Areas[4]				
		Region 9 Great Basin (TWE Region III)	Region 10 Northern Rockies (TWE Region I and Northern Terminal Siting Area)	Region 16 Southern Rockies Colorado Plateau (TWE Region II)	Region 33 Sonoran and Mojave Deserts (TWE Region IV and Southern Terminal Siting Area)	Nesting Habitat	Foraging Habitat	Winter Habitat		Region I	Region II	Region III	Region IV	Carried Forward in Detailed Analysis
Sprague's Pipit (*Anthus spragueii*)	PIF					Species does not occur in the analysis area and is not carried forward in detailed analysis. The species does not breed in the analysis area.								
Bohemian Waxwing[8] (*Bombycilla garrulous*)	PIF					Species does not breed in the analysis area.	Aspen forest and woodland, conifer forest, deciduous forest	Migratory	Species does not breed in the analysis area.	Low	Low	Low	Low[10]	Yes
Phainopepla (*Phainopepla nitens*)	PIF					Desert shrubland, woody riparian and wetlands	Desert shrubland, ephemeral wash, woody riparian and wetlands	Short-distance migrant between desert and semiarid woodlands. Desert shrubland, ephemeral wash, woody riparian and wetlands	February 28 – July 31 The species may product two or three clutches.	None	None	High	High	Yes
Virginia's Warbler[9] (*Oreothlypis virginiae*)	BCC; PIF; CO –SGCN; UT SGCN, Tier III; NV - SCP	X				Montane shrubland, pinyon-juniper woodland	Montane shrubland, pinyon-juniper woodland	Migratory	May 25 – August 15	Moderate	Moderate	Moderate	Moderate[10]	Yes
Lucy's Warbler (*Oreothlypis luciae*)	BCC; PIF; UT SGCN, Tier III				X	Woody riparian and wetlands	Woody riparian and wetlands	Migratory	May 1 – July 31 The species may produce two clutches.	None	None	Moderate	Moderate	Yes
Yellow Warbler (*Setophaga petechial*)	BCC				X	Aspen forest and woodland, woody riparian and wetlands	Aspen forest and woodland, woody riparian and wetlands	Migratory	May 5 – August 15 The species may produce two clutches.	Moderate	Moderate	Moderate	Moderate	Yes
Black-throated Gray Warbler[9] (*Dendroica nigrescens*)	PIF; CO– SGCN; UT SGCN, Tier III					Pinyon-juniper woodland	Pinyon-juniper woodland	Migratory	May 5 – August 5	Moderate	Moderate	Moderate	Low[10]	Yes
Grace's Warbler (*Dendroica graciae*)	BCC; PIF; CO - SGCN			X		Conifer forest, montane shrubland	Conifer forest, montane shrubland	Migratory	May 15 – August 5	None	None	Low	Low[10]	Yes
Green-tailed Towhee[8] (*Pipilo chlorurus*)	BCC; PIF	X				Montane shrubland, sagebrush shrubland, woody riparian and wetlands	Montane shrubland, sagebrush shrubland, woody riparian and wetlands	Migratory	May 1 – August 20 The species may produce two clutches.	Moderate	Moderate	Moderate	Low	Yes
Abert's Towhee (*Melozone aberti*)	PIF; UT SGCN, Tier III					Agricultural land, desert shrubland, woody riparian and wetlands	Agricultural land, desert shrubland, ephemeral wash, woody riparian and wetlands	Non-migratory Agricultural land, desert shrubland, ephemeral wash, woody riparian and wetlands	April 1 – September 15 The species may produce two clutches.	None	None	Moderate	Moderate	Yes
Rufous-winged Sparrow (*Peucaea carpalis*)	BCC				X	Species does not occur in the analysis area and is not carried forward in detailed analysis.								
American Tree Sparrow (*Spizella arborea*)	PIF					Species does not breed in the analysis area.	Agricultural land, grassland, montane shrubland	Migratory Grassland, montane shrubland	Species does not breed in the analysis area.	Moderate	Moderate	Moderate	Low[10]	Yes
Brewer's Sparrow[9] (*Spizella breweri*)	BCC; PIF; SSS; CO –SGCN; NV - SCP; UT SGCN, Tier III; WY SGCN, Tier II	X	X	X		Greasewood flat, sagebrush shrubland, saltbush shrubland	Greasewood flat, sagebrush shrubland, saltbush shrubland	Migratory	May 11 – August 5 The species may produce two clutches.	High	Moderate	Moderate	Moderate	Yes
Black-chinned Sparrow[9] (*Spizella atrogularis*)	BCC; PIF; NV - SCP	X			X	Desert shrubland, pinyon-juniper woodland	Desert shrubland, ephemeral wash, pinyon-juniper woodland	Migratory	April 20 – July 31	None	None	Low	Low	Yes
Black-throated Sparrow (*Amphispiza bilineata*)	PIF					Desert shrubland, greasewood flat, sagebrush shrubland	Desert shrubland, ephemeral wash, greasewood flat, sagebrush shrubland	Migratory	April 20 – July 31 The species may produce two clutches.	None	Moderate	High	High	Yes

Table 3.22-3 USFWS Birds of Conservation Concern and Partners in Flight Species of Continental Importance for the U.S. and Canada

Common Name (Scientific Name)	Status[1]	BCR in which BCC Species are Designated				Habitat Associations[2]			Approximate Breeding Dates[3]	Potential for Occurrence within Regional Migratory Bird Analysis Areas[4]				
		Region 9 Great Basin (TWE Region III)	Region 10 Northern Rockies (TWE Region I and Northern Terminal Siting Area)	Region 16 Southern Rockies Colorado Plateau (TWE Region II)	Region 33 Sonoran and Mojave Deserts (TWE Region IV and Southern Terminal Siting Area)	Nesting Habitat	Foraging Habitat	Winter Habitat		Region I	Region II	Region III	Region IV	Carried Forward in Detailed Analysis
Sage Sparrow[7,8] (*Amphispiza belli*)	BCC; PIF; SSS; CO –SGCN; NV – SCP; UT SGCN, Tier III; WY SGCN, Tier II	X	X			Sagebrush shrubland	Sagebrush shrubland	Migratory	April 11 – August 5 The species may produce two clutches.	High	High	Moderate	Low[10]	Yes
Grasshopper Sparrow (*Ammodramus savannarum*)	BCC; PIF; SSS; UT SGCN, Tier II; WY SGCN, Tier II			X		Grassland	Grassland	Migratory	June 1 – July 31 The species may produce two or three clutches.	Moderate	None	None	None	Yes
Fox Sparrow (*Passerella iliaca*)	PIF					Montane shrubland, woody riparian and wetlands	Montane shrubland, woody riparian and wetlands	Migratory	May 5 – August 5 The species may produce two clutches.	Moderate	Low	Low	None	Yes
Lincoln's Sparrow (*Melospiza lincolnii*)	PIF					Aspen forest and woodland, woody riparian and wetlands	Aspen forest and woodland, woody riparian and wetlands	Migratory	May 25 – August 20 The species may produce two clutches.	Moderate	Moderate	Moderate	Low	Yes
McCown's Longspur (*Rhynchophanes mccownii*)	BCC; PIF; CO –SGCN; WY SGCN, Tier II		X			Species does not occur in the analysis area and is not carried forward in detailed analysis. The species does not breed in the analysis area.								
Chestnut-collared Longspur[8] (*Calcarius ornatus*)	BCC; CO –SGCN; WY SGCN, Tier II			X		Grassland	Grassland	Migratory	May 1 – July 31 The species may produce two clutches.	Moderate	None	None	None	Yes
Indigo Bunting (*Passerina cyanea*)	PIF					Agricultural land, deciduous forest, montane shrubland	Agricultural land, deciduous forest, montane shrubland	Migratory	May 5 – August 15 The species may product two or three clutches.	None	Low	Low	Low[10]	Yes
Tricolored Blackbird (*Agelaius tricolor*)	BCC; NV - SCP	X				Species does not occur in the analysis area and is not carried forward in detailed analysis. The species does not breed in the analysis area.								
Yellow-headed Blackbird[8] (*Xanthocephalus xanthocephalus*)	PIF					Herbaceous wetland	Agricultural land, herbaceous wetland, woody riparian and wetlands	Migratory	April 15 – August 5	Moderate	Moderate	Moderate	Low	Yes
Scott's Oriole (*Icterus parisorum*)	PIF; NV - SCP					Desert shrubland, pinyon-juniper woodland	Desert shrubland, pinyon-juniper woodland	Migratory	May 10 – July 25 The species may produce two clutches.	None	Moderate	Moderate	Moderate	Yes
Black Rosy-finch[8] (*Leucosticte atrata*)	BCC; PIF; CO –SGCN; NV – SCP; UT SGCN, Tier III; WY SGCN, Tier II	X	X	X		Cliff and canyon	Agricultural land, cliff and canyon, montane grassland, montane shrubland, tundra	Altitudinal migrant Agricultural land, cliff and canyon, montane grassland, montane shrubland, tundra	June 10 – August 20	Low	Low	Low	None	Yes
Brown-capped Rosy-finch[9] (*Leucosticte australis*)	BCC; PIF; CO –SGCN; WY SGCN, Tier II			X		Cliff and canyon	Cliff and canyon, tundra	Altitudinal migrant Tundra	June 10 – August 20 The species may produce two clutches.	Low	Low	None	None	Yes
Pine Grosbeak[8] (*Pinicola enucleator*)	PIF					Conifer forest	Aspen forest and woodland, conifer forest	Partial altitudinal migrant Aspen forest and woodland, conifer forest	May 5 – August 10	Low	Low	None	None	Yes
Cassin's Finch[9] (*Carpodacus cassinii*)	BCC; PIF; CO –SGCN; NV - SCP		X	X		Conifer forest	Conifer forest, pinyon-juniper woodland	Altitudinal and latitudinal migrant Conifer forest, pinyon-juniper woodland	April 10 – August 20 The species may produce two clutches.	Low	Low	Low	None	Yes

Table 3.22-3 USFWS Birds of Conservation Concern and Partners in Flight Species of Continental Importance for the U.S. and Canada

Common Name (Scientific Name)	Status[1]	BCR in which BCC Species are Designated				Habitat Associations[2]			Approximate Breeding Dates[3]	Potential for Occurrence within Regional Migratory Bird Analysis Areas[4]				
		Region 9 Great Basin (TWE Region III)	Region 10 Northern Rockies (TWE Region I and Northern Terminal Siting Area)	Region 16 Southern Rockies Colorado Plateau (TWE Region II)	Region 33 Sonoran and Mojave Deserts (TWE Region IV and Southern Terminal Siting Area)	Nesting Habitat	Foraging Habitat	Winter Habitat		Region I	Region II	Region III	Region IV	Carried Forward in Detailed Analysis
White-winged Crossbill[9] (*Loxia leucoptera*)	PIF					Conifer forest	Conifer forest	Nomadic foraging rather than migratory Conifer forest	January 1 – December 31 The species may produce two or three clutches.	Low	Low	Low	None	Yes
Lawrence's Goldfinch (*Carduelis lawrencei*)	BCC				X	Species does not occur in the analysis area and is not carried forward in detailed analysis. The species does not breed in the analysis area.				None	None	None	None	No

[1] BCC = USFWS Bird of Conservation Concern (USFWS 2008)

PIF = Partners in Flight Species of Conservation Importance for the U.S. and Canada (Rich et al. 2004)

SSS = Species is federally listed, proposed, or candidate; state-listed as endangered or threatened; BLM Sensitive; or USFS Sensitive and is further addressed in Appendix G and Section 3.8, Special Status Wildlife Species.

CO – T: Colorado State Threatened; CO – SGCN = Colorado State Species of Greatest Conservation Need

UT - Tier I, II, and III: State Species of Greatest Conservation Need

WY - Tier I, II, and III: Wyoming State Species of Greatest Conservation Need

NV – SCP = Nevada State Species of Conservation Priority

[2] Vegetation communities include: agricultural land, aspen forest and woodland, barren/sparsely vegetated, cliff and canyon, conifer forest, deciduous forest, desert shrubland, dunes, ephemeral wash, grassland, greasewood flat, herbaceous wetland, montane grassland, montane shrubland, open water, pinyon-juniper woodland, 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. Although the developed/disturbed land cover type is not considered to be suitable habitat and is not included in analyses and reported disturbance acreages, some disturbance-tolerant species utilize these areas.

[3] Approximate breeding dates for each species were estimated from Baicich and Harrison 2005, various authors in Kingery 1998, and seasonal and spatial buffer guidelines provided by the USFWS 2002 and CDOW 2008.

[4] Potential for Occurrence is defined as:

High: The species' known geographic range includes the refined transmission corridor defined for the Project; and

a. Suitable habitat for the species (one or more of the 20 vegetation community/land cover types defined for the Project) occurs within the refined transmission corridor;

b. Natural Heritage data points for the species (year 2000 or more recent) exist within the refined transmission corridor; or

c. Professional knowledge of the species and regional area determined a high potential for occurrence.

Moderate: The species' known geographic range includes the Project potential disturbance area; and

a. Suitable habitat for the species (one or more of the 20 vegetation community/land cover types defined for the Project) occurs within the Project potential disturbance area;

b. Natural Heritage data points for the species (year 2000 or more recent) exist within the Project potential disturbance area; or

c. Professional knowledge of the species and regional area determined a moderate potential for occurrence.

Low: The species' geographic range includes the Project potential disturbance area and suitable habitat exists in the Project potential disturbance area.

None: The species' geographic range does not include the Project potential disturbance area and the species is not carried forward for further analysis.

[5] Species is analyzed in Section 3.7, Wildlife as an upland game bird.

[6] Suitable breeding habitat for this species is not present or is extremely limited within the analysis area. This species is not recommended for further analysis.

[7] The sage sparrow species (*Amphispiza belli*) recently has been split into sagebrush sparrow (*Artemisiospiza nevadensis*) and Bell's sparrow (*Artemisiospiza belli*). The sagebrush sparrow is the species that could occur along the Project in all four regions.

[8] The species is designated as climate endangered in the 2014 Audubon Birds and Climate Change Report.

[9] The species is designated as climate threatened in the 2014 Audubon Birds and Climate Change Report.

[10] The geographic range for the species includes the Region IV analysis area and a small amount of suitable habitat for the species exists within the Region IV analysis area; however, no suitable habitat occurs within the Region IV potential disturbance area. The species is not carried forward for analysis in Region IV.

Note: Shading indicates that the species is not further analyzed as a BCC or PIF species.

Sources: Wyoming Natural Diversity Database; Colorado Natural Heritage Program; Utah Natural Heritage Program; Nevada Natural Heritage Program; Wyoming Game and Fish Department State Wildlife Action Plan (WGFD 2010);Colorado's Comprehensive Wildlife Conservation Strategy and Wildlife Action Plans (CDOW 2006); Utah Comprehensive Wildlife Conservation Strategy (Sutter et al. 2005); and Nevada Wildlife Action Plan (Wildlife Action Plan Team 2012).Birds of North America Online (specific authors for each species account); NatureServe Explorer 2014; Professional knowledge provided by agency biologists.

State Species of Greatest Conservation Need and Priority

Management direction and guidance are provided through the implementation of state management plans, agreements, and wildlife plans (e.g., Colorado's Comprehensive Wildlife Conservation Strategy and Wildlife Action Plans [CDOW 2006], Nevada Wildlife Action Plan [Wildlife Action Plan Team 2006], Utah Comprehensive Wildlife Conservation Strategy [Sutter et al. 2005], and Wyoming State Wildlife Action Plan [2010a]). The SWAPs for Wyoming, Colorado, Utah, and Nevada were reviewed with respect to avian SGCN or SCP. A total of 78 species that could occur in the analysis area are listed as SGCN or SCP in these plans. Many of these species also are designated as federally listed, BLM Sensitive, USFS Sensitive, USFS MIS, state-listed endangered or threatened, BCC, or PIF species. BCC and PIF species that also are designated as SGCN or SCP are identified in **Table 3.22-3**.

For this analysis, a total of 91 species designated as BCC or PIF have geographic ranges that could include the analysis area. Of these, ten species have very low potential to occur in the habitats present in the analysis area and are not carried forward in analysis. In addition, four species, the California condor, Mexican spotted owl, western yellow-billed cuckoo, and greater sage-grouse, are federally listed or candidate species and are analyzed in detail in Section 3.8, Special Status Wildlife Species. The band-tailed pigeon is analyzed as an upland game bird in Section 3.7, Wildlife. Therefore, 76 BCC and/or PIF species are carried forward in analysis as species with higher conservation priority than more common migratory bird species. Of these 76 species, 51 are further designated as state species of conservation concern or priority in one or more of the states traversed by the Project.

In the Region I analysis area, 58 BCC and/or PIF species have potential to occur, 40 of which also are designated as state species of conservation concern or priority in Colorado or Wyoming. In the Region II analysis area, 57 BCC and/or PIF species have potential to occur, 34 of which also are designated as state species of conservation concern or priority in Colorado or Utah. In the Region III analysis area, 63 BCC and/or PIF species have potential to occur, 34 of which also are designated as state species of conservation concern or priority in Utah or Nevada. In the Region IV analysis area, 48 BCC and/or PIF species have potential to occur, 20 of which also are designated as state species of conservation priority in Nevada.

Migratory Bird Breeding Seasons

Many migratory bird species are sensitive to disturbance during the breeding season. During this time period, the integrity of the nest and foraging habitat used by adult birds is crucial to survival of young. In addition, young birds are at greater risk of predation during the nestling period and immediately post-fledging when their motor skills and foraging behaviors are developing. Consequently, the majority of measures to protect birds involve avoidance of construction activities in the immediate vicinity of nests to reduce potential impacts during the breeding season.

Although most bird species have relatively well-defined breeding seasons, information for some species-specific breeding periods remains unavailable. A few species (e.g., crossbills) may breed at any time of year provided abundant food is available (Benkman 2012). Typically, the breeding season has evolved to coincide with the abundance of critical resources, such as food or nesting material, that allow the young sufficient time to reach independence before winter. For example, great horned owls breed very early in the year so that the critical period of greatest food need by the nestlings coincides with the period when small mammal populations are high (Johnsgard 2002). Conversely, cedar waxwings breed late in the summer when berries, a dietary staple, are abundant (Witmer et al. 1997).

The timing and duration of the breeding season is species-specific and may vary according to latitude, elevation, and climatic conditions. Since weather and day lengths are major determinants of the nesting season, breeding generally occurs later in higher latitudes of a species' range (Baicich and Harrison 1997). This trend also applies to higher elevations, where snow and cold temperatures remain longer than at lower elevations. In areas with significant elevation gradients, the breeding season for a given

species may be prolonged. In addition, many species have extended breeding periods because they may produce two or even three clutches each year.

In general, large avian species (e.g., condors and eagles) have prolonged periods of development when the young remain in the nest and are dependent upon the parents. Other species, such as quail and grouse, may leave the nest within hours of hatching and forage with their parents long before they can fly. Small songbirds remain in the nest until they can fly; however, their development is often so rapid that the adults may complete the entire nesting cycle in one month or less. The duration of incubation and nestling periods is well established and can be predicted within a few days for most avian species.

Raptors typically produce one clutch per year and many exhibit high fidelity to nest sites and nesting territories (Romin and Muck 2002). For this reason, raptor nests are identified and monitored by a variety of agencies and organizations. Existing raptor nests within 1 mile of the Project potential disturbance area are presented in tables throughout this analysis. **Table 3.22-4** presents seasonal and spatial restrictions applicable to raptor nests located on public lands and buffer recommendations for raptor nests located on privately owned lands. These spatial and temporal disturbance buffers have been developed in coordination with various state and federal agencies to protect raptors and their nests during the breeding season.

Breeding seasons for raptor and other migratory bird species have been conservatively estimated by Project region. **Figures 3.22-5, 3.22-8,** and **3.22-13** present the approximate breeding seasons for each species group, by region. On these figures, a more focused breeding season estimate also is provided for each species group that includes BCC, PIF, or MIS species in each Project region. For this analysis, the avian breeding season in Region I is considered to begin one week later than Regions II and III and the avian breeding season for Region IV is considered to begin one week earlier than Regions II and III due to latitude and climatic differences.

Raptor Nest Data Assumptions

GIS shapefiles of raptor nest locations were obtained from AECOM (2012); Ashley National Forest (2010); BLM Cedar City FO (2010); BLM Little Snake FO (2011); BLM Price FO (2008); BLM Ely FO (2007); BLM Rawlins FO (2009), 2010; BLM Rock Springs FO (2009); BLM Vernal FO (2011, 2009); CDOW, BLM, USFS cooperative dataset (2009); EPG (2012); Manti-La Sal National Forest (2012); NDOW (2012); and Uinta National Forest (2011). In addition, information received through correspondence with agency wildlife biologists has been incorporated, as appropriate. Every effort was made to compile the most accurate dataset for the Project; however, there is potential for omission and duplication. The EIS analysis reports nests within 1 mile of the potential disturbance areas. It is possible for a particular raptor nest to occur within 1 mile of multiple alternative routes, micro-siting options, alternative connectors, alternative variations, ground electrode siting areas, or terminal siting areas. Thus, a given nest could be reported as potentially impacted multiple times, once for each of the facilities in its proximity and, therefore, should not be used as an indicator of species abundance.

The occurrence of raptor nests within 1 mile of Project disturbance areas (in total, a 4-mile-wide corridor centered on the 250-foot-wide transmission line ROW) is the primary metric used to analyze potential impacts to raptor species. This metric is based on USFWS recommendations for buffering occupied raptor nests up to 1 mile to prevent impacts to the most sensitive raptor species. Beyond 1 mile, construction noise would attenuate approximately to background levels and have negligible impact. This metric is a conservative estimate of indirect impacts as raptor sensitivity to noise disturbance varies by species and individual.

Table 3.22-4 Raptor Seasonal and Spatial Buffer Recommendations[1]

Species[2]	Agency[4, 5]	BCR Species Range	TWE Region	Spatial Buffer Recommendation	Seasonal Buffer Recommendation	Source
California Condor[3]	USFWS (Utah FO)	16	Region II	1.0 mile around active nest (disturbance)	To be determined	Romin and Muck 2002
Turkey Vulture[3]	USFWS (Utah FO)	9, 10, 16, 33	Entire Project	0.5 mile around active nest (disturbance)	May 1 – August 15	Romin and Muck 2002
Osprey	USFWS WY Ecological Services FO	9, 10, 16, 33	Entire Project	0.25 mile around active nest (disturbance)	April 1 – August 31	USFWS 2009
	CDOW/CPW	9, 10, 16, 33	Entire Project	0.25 mile around active nest (NSO) 0.5 mile around active nest (disturbance)	December 15 – July 15	CDOW 2008
	USFWS (Utah FO)	9, 10, 16, 33	Entire Project	0.5 mile around active nest (disturbance)	April 1 – August 31	Romin and Muck 2002
Bald Eagle[2]	USFWS WY Ecological Services FO	9, 10, 16, 33	Entire Project	0.5 mile around active nest (disturbance)	January 1 – August 15	USFWS 2014
	USFWS WY Ecological Services FO	9, 10, 16, 33	Entire Project	0.5 mile around communal winter roost	November 1 – April 1	USFWS 2014
	CDOW/CPW	9, 10, 16, 33	Entire Project	0.25 mile around active nest (NSO) 0.5 mile around active nest (disturbance)	October 15 – July 31	CDOW 2008
	CDOW/CPW	9, 10, 16, 33	Entire Project	0.25 mile around active winter roost (disturbance) 0.5 mile around active winter roost, if direct line of sight (disturbance)	November 15 – March 15	CDOW 2008
	USFWS (Utah FO)	9, 10, 16, 33	Entire Project	1.0 mile around active nest (disturbance)	January 1 – August 31	Romin and Muck 2002
Northern Harrier	USFWS WY Ecological Services FO	9, 10, 16, 33	Entire Project	0.25 mile around active nest (disturbance)	April 1 – August 15	USFWS 2009
	USFWS (Utah FO)	9, 10, 16, 33	Entire Project	0.5 mile around active nest (disturbance)	April 1 – August 5	Romin and Muck 2002

Table 3.22-4 Raptor Seasonal and Spatial Buffer Recommendations[1]

Species[2]	Agency[4, 5]	BCR Species Range	TWE Region	Spatial Buffer Recommendation	Seasonal Buffer Recommendation	Source
Sharp-shinned Hawk	USFWS WY Ecological Services FO	9, 10, 16, 33	Entire Project	0.25 mile around active nest (disturbance)	March 15 – August 31	USFWS 2009
	USFWS (Utah FO)	9, 10, 16, 33	Entire Project	0.5 mile around active nest (disturbance)	March15 – August 31	Romin and Muck 2002
Cooper's Hawk	USFWS WY Ecological Services FO	9, 10, 16, 33	Entire Project	0.25 mile around active nest (disturbance)	March 15 – August 31	USFWS 2009
	USFWS (Utah FO)	9, 10, 16, 33	Entire Project	0.5 mile around active nest (disturbance)	March15 – August 31	Romin and Muck 2002
Northern Goshawk[2]	USFWS WY Ecological Services FO	9, 10, 16, 33	Entire Project	0.5 mile around active nest (disturbance)	April 1 – August 15	USFWS 2009
	CDOW/CPW	9, 10, 16, 33	Entire Project	0.5 mile around active nest (NSO) 0.5 mile around active nest (disturbance)	March 1 – September 15	CDOW 2008
	USFWS (Utah FO)	9, 10, 16, 33	Entire Project	0.5 mile around active nest (disturbance)	March 1 – August 15	Romin and Muck 2002
Swainson's Hawk[2]	USFWS WY Ecological Services FO	9, 10, 16, 33	Entire Project	0.25 mile around active nest (disturbance)	April 1 – August 31	USFWS 2009
	CDOW/CPW	9, 10, 16, 33	Entire Project	0.25 mile around active nest (NSO) 0.25 mile around active nest (disturbance)	April 1 – July 15	CDOW 2008
	USFWS (Utah FO)	9, 10, 16, 33	Entire Project	0.5 mile around active nest (disturbance)	March15 – August 31	Romin and Muck 2002
Red-tailed Hawk	USFWS WY Ecological Services FO	9, 10, 16, 33	Entire Project	0.25 mile around active nest (disturbance)	February 1 – August 15	USFWS 2009
	CDOW/CPW	9, 10, 16, 33	Entire Project	0.33 mile around active nest (NSO) 0.33 mile around active nest (disturbance)	February 15 – July 15	CDOW 2008
	USFWS (Utah FO)	9, 10, 16, 33	Entire Project	0.5 mile around active nest (disturbance)	March 15 – August 15	Romin and Muck 2002

Table 3.22-4 Raptor Seasonal and Spatial Buffer Recommendations[1]

Species[2]	Agency[4, 5]	BCR Species Range	TWE Region	Spatial Buffer Recommendation	Seasonal Buffer Recommendation	Source
Ferruginous Hawk[2]	USFWS WY Ecological Services FO	9, 10, 16, 33	Entire Project	1.0 mile around active nest (disturbance)	March 15 – July 31	USFWS 2009
	CDOW/CPW	9, 10, 16, 33	Entire Project	0.5 mile around active nest (NSO) 0.5 mile around active nest (disturbance)	February 1 – July 15	CDOW 2008
	USFWS (Utah FO)	9, 10, 16, 33	Entire Project	0.5 mile around active nest (disturbance)	March 1 – August 1	Romin and Muck 2002
Golden Eagle[2]	USFWS WY Ecological Services FO	9, 10, 16, 33	Entire Project	0.5 mile around active nest (disturbance)	January 15 – July 31	USFWS 2009
	CDOW/CPW	9, 10, 16, 33	Entire Project	0.25 mile around active nest (NSO) 0.5 mile around active nest (disturbance)	December 15 – July 15	CDOW 2008
	USFWS (Utah FO)	9, 10, 16, 33	Entire Project	0.5 mile around active nest (disturbance)	January 1 – August 31	Romin and Muck 2002
American Kestrel	USFWS WY Ecological Services FO	9, 10, 16, 33	Entire Project	0.125 mile around active nest (disturbance)	April 1 – August 15	USFWS 2009
	USFWS (Utah FO)	9, 10, 16, 33	Entire Project	None	April 1 – August 15	Romin and Muck 2002
Merlin	USFWS WY Ecological Services FO	9, 10, 16, 33	Entire Project	0.5 mile around active nest (disturbance)	April 1 – August 15	USFWS 2009
	USFWS (Utah FO)	9, 10, 16, 33	Entire Project	0.5 mile around active nest (disturbance)	April 1 – August 31	Romin and Muck 2002
Peregrine Falcon[2]	USFWS WY Ecological Services FO	9, 10, 16, 33	Entire Project	0.5 mile around active nest (disturbance)	March 1 – August 15	USFWS 2009
	CDOW/CPW	9, 10, 16, 33	Entire Project	0.5 mile around active nest (NSO) 0.25 mile around active nest (disturbance)	March 15 – July 31	CDOW 2008
	USFWS (Utah FO)	9, 10, 16, 33	Entire Project	1.0 mile around active nest (disturbance)	February 1 – August 31	Romin and Muck 2002

Table 3.22-4 Raptor Seasonal and Spatial Buffer Recommendations[1]

Species[2]	Agency[4, 5]	BCR Species Range	TWE Region	Spatial Buffer Recommendation	Seasonal Buffer Recommendation	Source
Prairie Falcon[2]	USFWS WY Ecological Services FO	9, 10, 16, 33	Entire Project	0.5 mile around active nest (disturbance)	March 1 – August 15	USFWS 2009
	CDOW/CPW	9, 10, 16, 33	Entire Project	0.5 mile around active nest (NSO) 0.5 mile around active nest (disturbance)	March 15 – July 15	CDOW 2008
	USFWS (Utah FO)	9, 10, 16, 33	Entire Project	0.25 mile around active nest (disturbance)	April 1 – August 31	Romin and Muck 2002
Barn Owl	USFWS WY Ecological Services FO	9, 10, 16, 33	Entire Project	0.125 mile around active nest (disturbance)	February 1 – September 15	USFWS 2009
	USFWS (Utah FO)	9, 10, 16, 33	Entire Project	None	February 1 – September 15	Romin and Muck 2002
Flammulated Owl[2]	USFWS (Utah FO)	9, 10, 16, 33	Entire Project	0.25 mile around active nest (disturbance)	April 1 – September 30	Romin and Muck 2002
Eastern Screech-Owl	USFWS WY Ecological Services FO	10	Region I and Northern Terminal	0.125 mile around active nest (disturbance)	March 1 – August 15	USFWS 2009
Western Screech-Owl	USFWS WY Ecological Services FO	9, 10, 16, 33	Entire Project	0.125 mile around active nest (disturbance)	March 1 – August 15	USFWS 2009
	USFWS (Utah FO)	9, 10, 16, 33	Entire Project	0.25 mile around active nest (disturbance)	March 1 – August 15	Romin and Muck 2002
Great Horned Owl	USFWS WY Ecological Services FO	9, 10, 16, 33	Entire Project	0.125 mile around active nest (disturbance)	December 1 – September 30	USFWS 2009
	USFWS (Utah FO)	9, 10, 16, 33	Entire Project	0.25 mile around active nest (disturbance)	December 1 – September 30	Romin and Muck 2002
Northern Pygmy-Owl	USFWS WY Ecological Services FO	10, 16	Regions I and II, Northern Terminal	0.25 mile around active nest (disturbance)	April 1 – August 1	USFWS 2009
	USFWS (Utah FO)	10, 16	Regions I and II, Northern Terminal	0.25 mile around active nest (disturbance)	April 1 – August 1	Romin and Muck 2002

Table 3.22-4 Raptor Seasonal and Spatial Buffer Recommendations[1]

Species[2]	Agency[4, 5]	BCR Species Range	TWE Region	Spatial Buffer Recommendation	Seasonal Buffer Recommendation	Source
Burrowing Owl[2]	USFWS WY Ecological Services FO	9, 10, 16, 33	Entire Project	0.25 mile around active nest (disturbance)	April 1 – September 15	USFWS 2009
	CDOW/CPW	9, 10, 16, 33	Entire Project	150 feet around active nest (disturbance)	March 15 – October 31	CDOW 2008
	USFWS (Utah FO)	9, 10, 16, 33	Entire Project	0.25 mile around active nest (disturbance)	March 1 – August 31	Romin and Muck 2002
Mexican Spotted Owl[2]	USFWS (Utah FO)	16	Region II	0.5 mile around active nest (disturbance)	March 1 – August 31	Romin and Muck 2002
Great Gray Owl	USFWS WY Ecological Services FO	10	Region I and Northern Terminal	0.25 mile around active nest (disturbance)	March 15 – August 31	USFWS 2009
Long-eared Owl	USFWS WY Ecological Services FO	9, 10, 16, 33	Entire Project	0.25 mile around active nest (disturbance)	February 1 – August 15	USFWS 2009
	USFWS (Utah FO)	9, 10, 16, 33	Entire Project	0.25 mile around active nest (disturbance)	February 1 – August 15	Romin and Muck 2002
Short-eared Owl[2]	USFWS WY Ecological Services FO	9, 10, 16, 33	Entire Project	0.25 mile around active nest (disturbance)	March 15 – August 1	USFWS 2009
	USFWS (Utah FO)	9, 10, 16, 33	Entire Project	0.25 mile around active nest (disturbance)	March 1 – August 31	Romin and Muck 2002
Boreal Owl	USFWS WY Ecological Services FO	10, 16	Regions I and II, Northern Terminal	0.25 mile around active nest (disturbance)	February 1 – July 31	USFWS 2009
	USFWS (Utah FO)	10, 16	Regions I and II, Northern Terminal	0.25 mile around active nest (disturbance)	February 1 – July 31	Romin and Muck 2002
Northern Saw-whet Owl	USFWS WY Ecological Services FO	9, 10, 16, 33	Entire Project	0.25 mile around active nest (disturbance)	March 1 – August 31	USFWS 2009
	USFWS (Utah FO)	9, 10, 16, 33	Entire Project	0.25 mile around active nest (disturbance)	March 1 – August 31	Romin and Muck 2002

Recommended seasonal and spatial buffers to protect occupied raptor nests vary accordingly (**Table 3.22-4**). BLM FOs have specific seasonal and spatial stipulations to protect nesting raptors on BLM-administered lands. These stipulations are presented in **Appendix C**, Section C.3. USFS required stipulations to protect nesting raptors have only been developed for the northern goshawk and are included in the individual forest Standards and Guidelines presented in **Appendix C**, Section C.4. Buffers recommended by the USFWS and appropriate state wildlife agencies would be applied to all other land jurisdictions in coordination with TransWest and respective landowners whose lands would be traversed by the Project.

It is common for raptor nests to be used by different species, including ravens, in different years. An occupied raptor nest would be ascribed the spatial and seasonal buffers appropriate for the species using it during the year(s) of construction. An occupied nest is defined as one that is repaired or tended in the current year by a pair of raptors. Presence of raptors (adults, eggs, or young), evidence of nest repair or marking, freshly molted feathers or plucked down, or current year whitewash are all considered signs suggesting nest site occupancy. All nest sites within a nesting territory are deemed occupied while raptors are demonstrating pair-bonding activities and developing an affinity to a given area. If these activities culminate in an individual nest being selected for use by a breeding pair, then the other nests in the nesting territory would no longer be considered occupied for the current breeding season and would not require spatial and temporal buffers for that season. A nest site is considered occupied throughout the periods of initial courtship and pair bonding, egg laying, incubation, brooding, fledging, and post-fledging dependency of the young (Romin and Muck 2002). In this EIS, the number of historic raptor nests is reported by Project region for each of the transmission line alternatives and other Project components. While the number, activity status, and species using individual raptor nests vary annually, a tabulation of historic raptor nests is useful in comparing the general availability of raptor nesting habitat along each of the alternatives.

Table 3.22-4 provides recommended seasonal and spatial restrictions for raptor nests as a supplement to the required raptor nest buffers on BLM-administered lands and northern goshawk buffers on National Forest System lands (**Appendix C**, Sections C.3 and C.4). The recommended spatial and temporal disturbance buffers listed in **Table 3.22-4** have been developed in coordination with various state and federal agencies. In many cases, these recommended buffers are identical or similar to buffers required by respective BLM RMPs and USFS LRMPs. For locations in which BLM and USFS buffers are not specified or are on lands outside of BLM or USFS jurisdiction, these recommended buffers would be implemented at the discretion of and in coordination with the respective land management agency.

Raptor species are known to use nests for multiple years. The species using a particular nest may vary annually. For example, most 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 raptors, but raptor nest data often include common raven nests for this reason.

It should be noted that raptor nest data is not necessarily an accurate portrayal of the actual distribution and abundance of nesting raptors. The availability of nest data is partially dependent on whether previous surveys have been conducted for other projects or for research or monitoring purposes. Alternatives located in areas where previous research or monitoring has been done will likely include more raptor nest data than alternatives without such additional occurrence information. Therefore, it is not possible to compare potential impacts to raptors among alternatives solely on the basis of known raptor nest locations.

When a raptor nest is identified outside of the nesting season or when no birds are present, it is often not possible to determine the species that used the nest. Such nest occurrence data is still valuable and is included in analyses as the nest of an unknown species. As previously described, the species using a nest can change over time. Nests for which the species is unknown are reported both in Section 3.22, Migratory Birds, and Section 3.8, Special Status Wildlife Species, because the potential exists that a nest of an unknown species could be used by a special status raptor species.

Finally, while the most recent raptor nest data has been used in this analysis, nests and nest structures (e.g., trees) can be destroyed and new nests are constructed each year. Prior to construction, a comprehensive raptor nest survey would be conducted along the approved alternative. This survey would provide the data needed to inform final micro-siting adjustments within the refined transmission line corridor and restrict the timing of construction activities to avoid or minimize impacts to nesting raptors. Disturbance to nests during the avian breeding season would be avoided to the extent possible during Project construction, operation, and maintenance. The timing of the raptor breeding season can vary substantially based on species, latitude, elevation, weather, and numerous other factors.

3.22.4.5 Avian Conservation Measures

Detailed information regarding applicable avian conservation measures and protections is located in **Appendix C** and Section 3.22.6 below. Seasonal and spatial restrictions to protect raptor nests are presented in **Table 3.22-4**.

Avian Power Line Interaction Committee

The Avian Power Line Interaction Committee (APLIC) was formed in 1989 to address whooping crane collisions with power lines. Since its inception, the organization has expanded to address a variety of avian/power line interactions including electrocutions, collisions, and nests. APLIC membership includes over 50 utilities, electric institutes, and the USFWS. APLIC has developed guidance documents identifying causes and minimization methods for avian electrocutions and collisions and has released national Avian Protection Plan Guidelines in conjunction with the USFWS in 2005 (APLIC 2014). APLIC also published Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006 and Reducing Avian Collisions with Power Lines: The State of the Art in 2012. TWE has committed to following the practices and direction outlined in the APLIC 2006 document through the implementation of Project specific design features (TWE-30) as listed in **Appendix C**, **Table C.2-1**.

Avian Protection Plan

TransWest has developed an operational policy and a comprehensive strategy for avoiding and minimizing impacts to birds during construction and operation of the proposed Project. This plan, termed an Avian Protection Plan (APP), is an over-arching document containing avian-safe construction design standards, nest management procedures, monitoring and reporting requirements, and other components described in the Avian Protection Plan Guidelines developed by the USFWS and APLIC in 2005 (APLIC 2012). APPs are considered to be living documents that are modified over time to improve their effectiveness at reducing avian mortality associated with power lines. The current draft of TransWest's APP may be found in Appendix B of the POD (Final EIS **Appendix D**).

3.22.5 Regional Summary

As described in Section 3.22.4, Baseline Description, a wide variety of avian habitats and species is found within the analysis area. Many of these species are found over large geographic areas in various vegetation communities and elevations. As described in Section 3.5, Vegetation, 20 vegetation communities provide avian nesting, roosting, foraging, and winter habitat within the analysis area. Each Project region has multiple dominant habitat types (**Table 3.5-4**). Although the developed/disturbed land cover type is not considered to be suitable habitat and is not included in analyses or reported disturbance acreages, some disturbance-tolerant avian species utilize these areas. Migratory bird species and habitats specific to each Project region are summarized below. The greatest species diversity occurs in Region II, due to elevation variation and associated habitat diversity. The potential occurrence of special status avian species by Project region is discussed in detail in **Appendix G**, **Table G-2** and Section 3.8.5, Regional Summary of Special Status Wildlife Species.

3.22.5.1 Terminals and Project Design Options

Section 2.4.3.1 provides a description of the siting areas for the Northern Terminal, Southern Terminal, and Southern Terminal Alternate. The exact terminal sites have not yet been determined; however, it is

known that they would be constructed within the terminal siting areas. The Northern Terminal would be sited within the Northern Terminal siting area in Region I. The Southern Terminal would be sited within the Southern Terminal siting area in Region IV. The Southern Terminal Alternate would be sited within the same vegetation communities as the Southern Terminal and would be within the Southern Terminal Siting Area.

Section 2.1.2 provides an explanation of Project Design Options. Design Options 2 and 3 would involve construction of the Southern Terminal near the IPP, at the border of Regions II and III. Impacts to vegetation communities under Design Options 2 and 3 are presented in **Table 3.5-8**. Baseline descriptions for species that could occur in habitats at the terminal siting locations are presented first in this analysis because construction of these facilities would be necessary, regardless of the final alignment chosen.

Northern Terminal Siting Area

Approximately 51 percent of the Northern Terminal siting area is within saltbush shrubland and approximately 37 percent is within sagebrush shrubland. Based on available raptor nest data, one golden eagle nest and three nests of unknown species have been documented within 1 mile of the Northern Terminal siting area. A variety of migratory bird species could inhabit the Northern Terminal siting area. Common representative species include horned lark, black-billed magpie, common raven, western kingbird, lark sparrow, and American goldfinch. BCC and PIF species that could occur at the Northern Terminal siting area would be the same as those presented for Region I alternatives.

Southern Terminal Siting Area

The Southern Terminal is almost entirely within developed/disturbed areas. Approximately 11 percent of the Southern Terminal siting area is within the desert shrubland community. Although the developed/disturbed land cover type is not considered to be suitable migratory bird habitat and is not included in analyses or reported disturbance acreages, some disturbance-tolerant avian species utilize these areas.

The Southern Terminal Alternate and associated facilities are sited almost entirely within developed/disturbed areas. Approximately 11 percent of the Southern Terminal Alternate siting area is within the desert shrubland community. Although the developed/disturbed land cover type is not considered to be suitable migratory bird habitat and is not included in analyses or reported disturbance acreages, some avian species utilize these areas. No raptor nests are known to occur within 1 mile of the Southern Terminal siting area, which includes the Southern Terminal Alternate. Common representative migratory bird species that may inhabit the Southern Terminal and Southern Terminal Alternate siting area include rock wren, black-tailed gnatcatcher, and Cassin's kingbird. BCC and PIF species that could occur at the Southern Terminal(s) siting area would be the same as those presented for Region IV alternatives.

Southern Terminal located near IPP (Design Option 2)

Approximately 51 percent of the Southern Terminal located near IPP (Design Option 2) siting area is within the greasewood flat vegetation community and 44 percent is within the saltbush shrubland vegetation community. Common representative migratory bird species that may inhabit the Southern Terminal located near IPP (Design Option 2) siting area include western kingbird, dark-eyed junco, white-crowned sparrow, black billed magpie, and cliff swallow. At the Design Options 2 and 3 siting areas, BCC and PIF species would be the same as those presented for the Regions II and III alternatives. Seventeen raptor nests are known to occur within 1 mile of the Southern Terminal located near IPP (Design Option 2) siting area. These include burrowing owl, golden eagle, great horned owl, and prairie falcon, and nine nests of unknown species. Special status raptor species are analyzed in Section 3.8, Special Status Wildlife Species.

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 for Design Option 2. Approximately 51 percent of the Southern Substation located near IPP (Design Option 3) is within the greasewood flat vegetation community and 44 percent is within the saltbush shrubland vegetation community. Migratory bird species would be the same as those presented for the Southern Terminal located near IPP (Design Option 2) siting area.

3.22.5.2 Region I

Migratory Bird Habitat

The Region I analysis area extends southwest from the Northern Terminal siting area near Rawlins, Wyoming through northwestern Colorado. The dominant vegetation communities are sagebrush shrubland and saltbush shrubland. All vegetation communities except desert shrubland and tundra occur in the Region I analysis area. A description of vegetation communities is presented in Section 3.5, Vegetation.

This analysis focuses on two specific types of priority habitats identified for migratory birds: vegetation communities identified as priority habitat in the applicable State Wildlife Action Plans (SWAPs) for Colorado and Wyoming and areas designated as IBAs and BHCAs in the Region I analysis area. Details regarding BHCAs and associated species and Audubon IBAs are discussed below.

All Region I alternatives in Colorado are located within sagebrush shrubland or riparian habitats and both of these communities are identified as priority habitats in the Colorado SWAP (CDOW 2006). Priority habitats within the Region I analysis area and identified in the Wyoming SWAP (WGFD 2010) include grassland, greasewood flat, herbaceous wetland, sagebrush shrubland, saltbush shrubland, and woody riparian and wetlands.

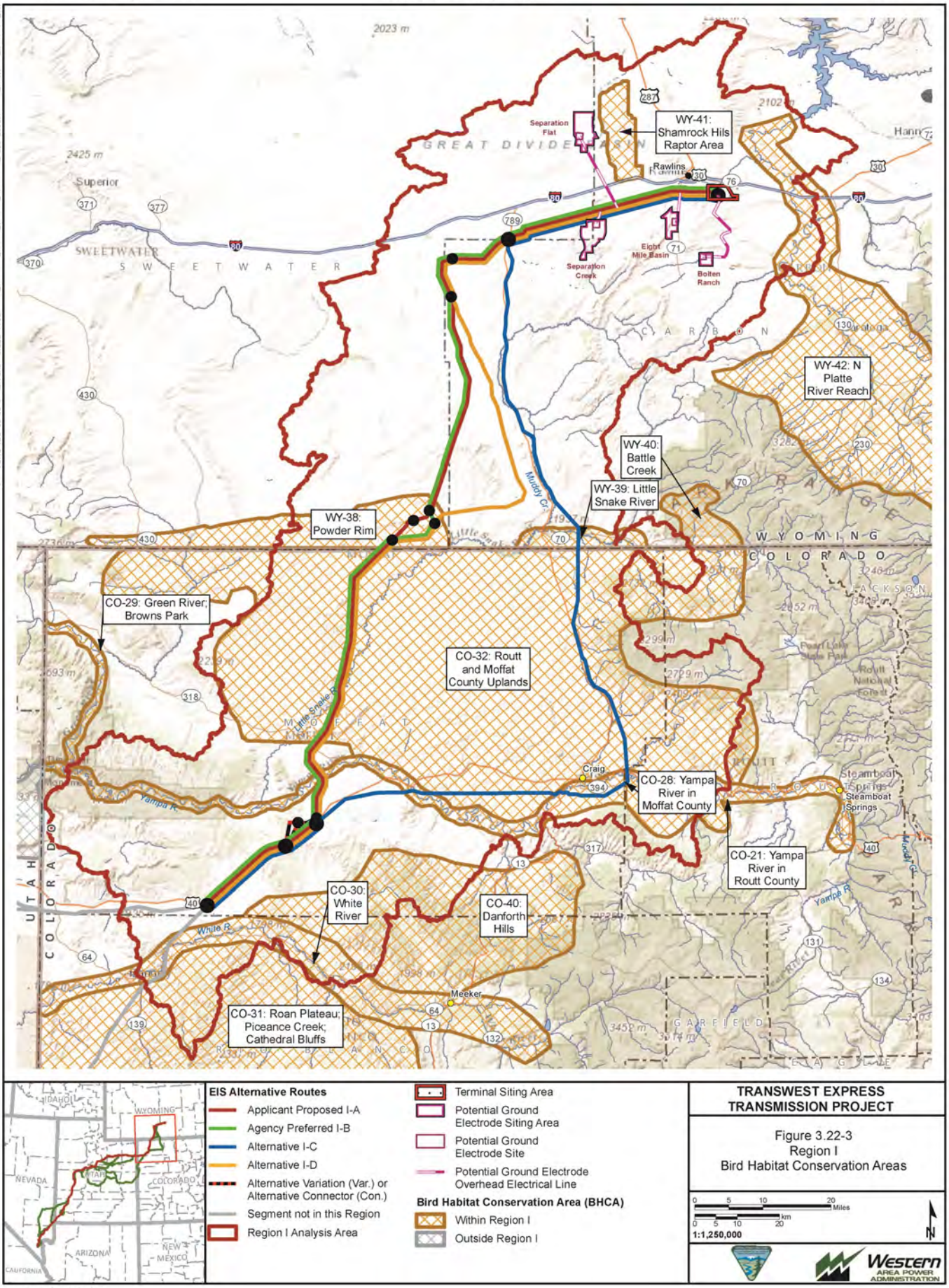
It is important to note that approximately 56 percent of the Region I analysis area is located within sagebrush shrubland habitat. Potential impacts to these areas are quantitatively assessed in, and are anticipated to be fully offset through, TransWest's Greater Sage-Grouse Habitat Equivalency Analysis, Mitigation, and Monitoring Plan that is being developed in coordination with the BLM and Western as discussed in Section 3.8.6.2, Impacts Common to All Alternative Routes and Associated Components. It is anticipated that BCC, PIF, and other migratory bird species that inhabit sagebrush shrubland communities will benefit from this mitigation.

BHCAs and Representative Priority Bird Species

The Region I analysis area is within USFWS Bird Conservation Regions 10 (Northern Rockies) and 16 (Southern Rockies/Colorado Plateau). **Table 3.22-5** and **Figure 3.22-3** present the five BHCAs within the Region I potential disturbance area and several representative bird species for each (Colorado PIF 2000; Nicholoff 2003; USFWS 2008; Wyoming Steering Committee IWJV 2005). Within Region I, 9 BHCAs are within the analysis area comprising a total of 2,105,476 acres.

Audubon Important Bird Areas

A total of seven Audubon IBAs are within, or in proximity to, the Region I analysis area and are discussed below. **Figure 3.22-4** presents IBAs in the Region I analysis area.


WY-41: Shamrock Hils Raptor Area
Separation Flat
Separation Creek
Eight Mile Basin
Bolten Ranch
Rawlins
WY-42: N Platte River Reach
WY-40: Battle Creek
WY-39: Little Snake River
WY-38: Powder Rim
CO-29: Green River; Browns Park
CO-32: Routt and Moffat County Uplands
CO-28: Yampa River in Moffat County
CO-21: Yampa River in Routt County
CO-30: White River
CO-40: Danforth Hills
CO-31: Roan Plateau; Piceance Creek; Cathedral Bluffs
Craig
Steamboat Springs
Meeker
Superior
SWEETWATER
CARBON
WYOMING
COLORADO
UTAH
EIS Alternative Routes
Applicant Proposed I-A
Agency Preferred I-B
Alternative I-C
Alternative I-D
Alternative Variation (Var.) or Alternative Connector (Con.)
Segment not in this Region
Region I Analysis Area
Terminal Siting Area
Potential Ground Electrode Siting Area
Potential Ground Electrode Site
Potential Ground Electrode Overhead Electrical Line
Bird Habitat Conservation Area (BHCA)
Within Region I
Outside Region I
TRANSWEST EXPRESS TRANSMISSION PROJECT
Figure 3.22-3
Region I
Bird Habitat Conservation Areas
1:1,250,000
Western AREA POWER ADMINISTRATION
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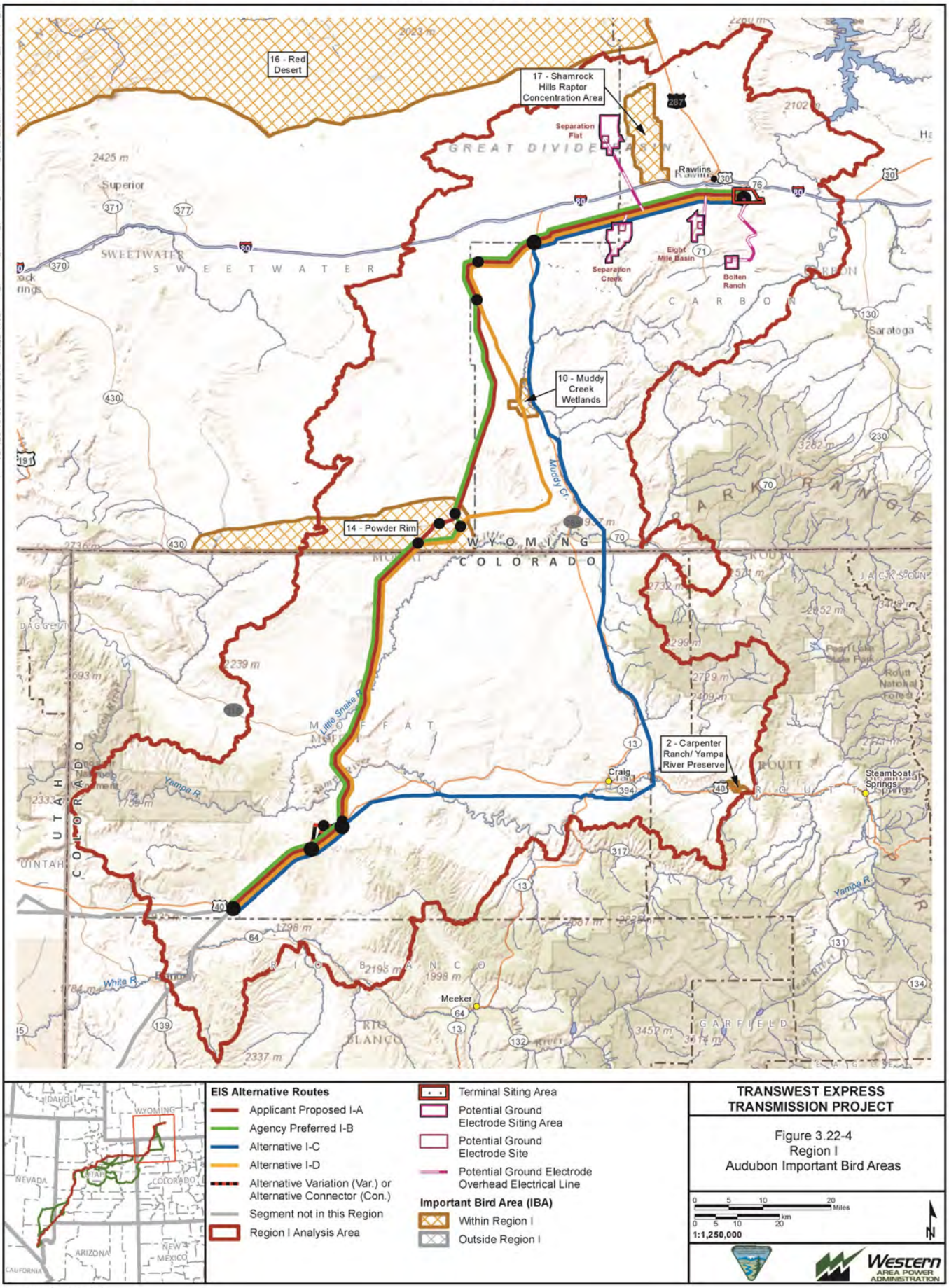

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Table 3.22-5 Region I BHCAs and Representative Priority Bird Species

State	BCR	BHCA Number and Name	Primary Habitats	Representative Priority Bird Species[1,2]
Wyoming	10	38 – Powder Rim	Sagebrush shrubland Utah juniper	Ash-throated flycatcher[3] Plumbeous vireo[3]
Wyoming	10	39 – Little Snake River	Herbaceous wetland Open water	Cinnamon teal Northern harrier[3] Marsh wren[2]
Colorado	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
Colorado	10	28 – Yampa River in Moffat County	Herbaceous wetland Open water Woody riparian and wetlands	Northern harrier[3] Cinnamon teal Marsh wren[3]
Colorado	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]

1 **Table 3.22-3** presents a comprehensive list of BCC and PIF species potentially inhabiting the analysis area, their nesting, foraging, and winter habitat associations, and potential for occurrence within Project regions.

2 Many BCC and PIF species also are special status species and are presented in further detail in Section 3.8, Special Status Wildlife Species.

3 PIF Priority Bird Species may differ between states depending on abundance and threats to the species.

Red Desert IBA

The Red Desert IBA is located approximately 22 miles from the Region I potential disturbance area. The site consists of a 1,912,003 acre complex of IBA sites in Sweetwater County, Wyoming. The Red Desert IBA also is 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 occur in the micro-habitats in the Red Desert IBA (National Audubon Society 2011).

Muddy Creek Wetlands IBA

The Muddy Creek Wetlands IBA is partially within the Region I potential disturbance area in Carbon County, Wyoming. The IBA consists of a 7,202 acre site that encompasses 6 miles of riparian vegetation along Muddy Creek. Habitat at the site includes a willow-dominated riparian corridor with associated floodplain, 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 avian species, such as the white faced ibis, snowy egret, herons, grebes, warblers, and the willow flycatcher. The wetlands support up to 50,000 ducks during migration and a wide variety of breeding shorebirds, including American avocets and black-necked stilts (National Audubon Society 2011).

Powder Rim IBA

The Powder Rim IBA is partially within the Region I potential disturbance area in Sweetwater County, Wyoming. The IBA consists of a 131,895 acre mosaic of juniper woodlands and big sagebrush communities. Because juniper habitat is limited in Wyoming, the avian assemblage at Powder Rim IBA is unique and has significant conservation value. The juniper woodlands 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 approximately 10 miles from the Region I potential disturbance area in Routt County, Colorado. The IBA consists of 1,727 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).

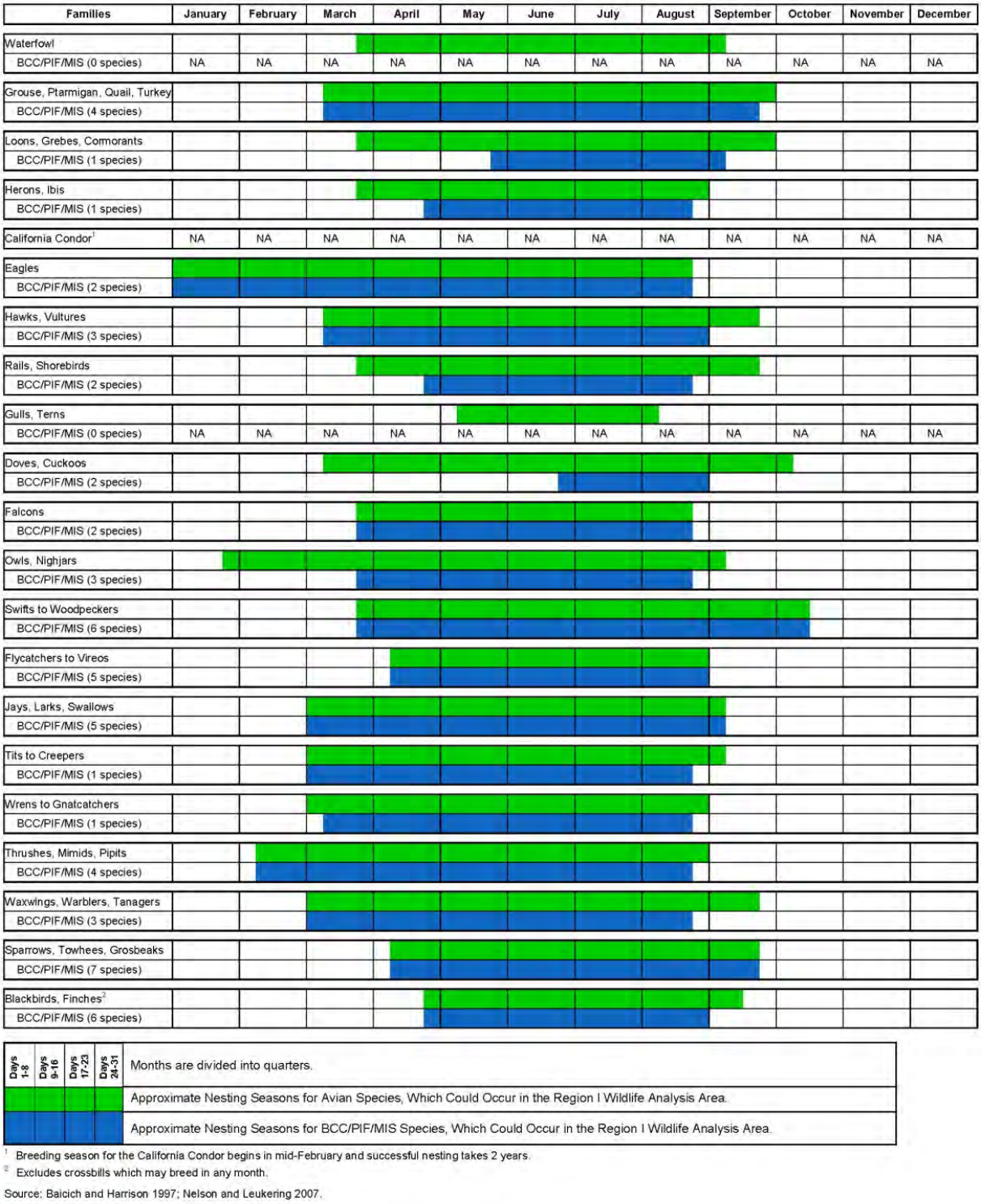
Shamrock Hills Raptor Concentration Area IBA

The Shamrock Hills Raptor Concentration Area IBA is located approximately 3 miles from the Region I potential disturbance area in Carbon County, Wyoming. The IBA consists of 36,746 acres encompassing a variety of habitat types. Sagebrush shrubland 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 bird species known to inhabit 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).

Migratory Bird Species

A variety of migratory bird species inhabits the Region I analysis area. The range of species diversity reported for the four counties traversed by Region I alternatives is 251 to 256 migratory bird species (eBird 2014). Species that are designated as special status are presented in Section 3.8, Special Status Wildlife Species. **Figure 3.22-5** presents estimated breeding seasons for avian species groups and BCC and PIF species within those groups for Region I.

Table 3.22-6 presents raptor species with potential to occur in suitable habitat in the Region I analysis area (eBird 2014). Common ravens are not considered raptors, but ravens may utilize historic raptor nests and conversely, raptors may add to and/or utilize historic raven nests in order to make them suitable for nesting. Special status raptor species that occur in Region I are addressed in Section 3.8.5.6.



[1] Breeding season for the California Condor begins in mid-February and successful nesting takes 2 years.

[2] Excludes crossbills which may breed in any month.

Source: Baicich and Harrison 1997; Nelson and Leukering 2007.

Figure 3.22-5 Approximate Breeding Seasons for Avian Species in Region I

Table 3.22-6 Region I Raptor Species Potentially Occurring within the Migratory Bird Analysis Area and their Habitat Associations

Common Name (*Scientific name*)	BCC or PIF	Region I Breeding, Foraging, and Winter Habitat Associations[1,2]
Osprey[3] (*Pandion haliaetus*)		Open water, woody riparian and wetlands
Bald Eagle[3] (*Haliaeetus leucocephalus*)	BCC; PIF	Open water, woody riparian and wetlands
Northern Harrier[3] (*Circus cyaneus*)		Agricultural land, grassland, herbaceous wetland, montane grassland, woody riparian and wetlands
Sharp-shinned Hawk (*Accipiter striatus*)		Agricultural land, conifer forest, deciduous forest, woody riparian and wetlands
Cooper's Hawk (*Accipiter cooperii*)		Agricultural land, conifer forest, deciduous forest, woody riparian and wetlands
Northern Goshawk (*Accipiter gentilis*)		Conifer forest
Swainson's Hawk[3] (*Buteo swainsoni*)	BCC	Agricultural land, grassland, montane grassland, montane shrubland, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland
Red-tailed Hawk (*Buteo jamaicensis*)		Agricultural land, cliff and canyon, grassland, greasewood flat, herbaceous wetland, montane grassland, montane shrubland, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, woody riparian and wetlands
Ferruginous Hawk[3] (*Buteo regalis*)	BCC	Agricultural land, cliff and canyon, grassland, montane grassland, montane shrubland, sagebrush shrubland, saltbush shrubland
Rough-legged Hawk (*Buteo lagopus*)	PIF	Agricultural land, grassland, montane grassland
Golden Eagle[3] (*Aquila chrysaetos*)	BCC	Agricultural land, cliff and canyon, grassland, montane grassland, montane shrubland, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland
American Kestrel[3] (*Falco sparverius*)		Agricultural land, grassland, greasewood flat, herbaceous wetland, montane grassland, montane shrubland, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, woody riparian and wetlands
Merlin[3] (*Falco columbarius*)		Agricultural land, conifer forest, deciduous forest, grassland, montane grassland, woody riparian and wetlands
Peregrine Falcon[4] (*Falco peregrinus*)	BCC; PIF	Cliff and canyon, grassland, herbaceous wetland, montane grassland, montane shrubland, pinyon-juniper woodland, saltbush shrubland, woody riparian and wetlands
Prairie Falcon[3] (*Falco mexicanus*)	BCC	Cliff and canyon, grassland, montane grassland, montane shrubland, sagebrush shrubland, saltbush shrubland
Flammulated Owl (*Otus flammeolus*)	BCC; PIF	Conifer forest
Western Screech-owl[3] (*Megascops kennicottii*)		Deciduous forest, woody riparian and wetlands
Eastern Screech-owl (*Megascops asio*)		Deciduous forest, woody riparian and wetlands
Great Horned Owl (*Bubo virginianus*)		Agricultural land, conifer forest, deciduous forest, grassland, greasewood flat, herbaceous wetland, montane grassland, montane shrubland, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, woody riparian and wetlands
Northern Pygmy Owl[3] (*Glaucidium californicum*)		Conifer forest, deciduous forest, woody riparian and wetlands
Burrowing Owl[3] (*Athene cunicularia*)	BCC	Agricultural land, grassland, montane grassland, sagebrush shrubland, saltbush shrubland

Table 3.22-6 Region I Raptor Species Potentially Occurring within the Migratory Bird Analysis Area and their Habitat Associations

Common Name (*Scientific name*)	BCC or PIF	Region I Breeding, Foraging, and Winter Habitat Associations[1,2]
Long-eared Owl[3] (*Asio otus*)		Agricultural land, deciduous forest, grassland, montane grassland, pinyon-juniper woodland, woody riparian and wetlands
Short-eared Owl[3] (*Asio flammeus*)	PIF	Agricultural land, grassland, herbaceous wetland, montane grassland
Boreal Owl[3] (*Aegolius funereus*)		Conifer forest
Northern Saw-whet Owl[3] (*Aegolius acadicus*)		Conifer forest, deciduous forest, woody riparian and wetlands
Common Raven[3] (*Corvus corax*)		Agricultural land, cliff and canyon, conifer forest, deciduous forest, grassland, greasewood flat, herbaceous wetland, montane grassland, montane shrubland, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, woody riparian and wetlands

[1] Habitat Association refers to vegetation communities, as presented in **Table 3.22-1**.

[2] The following habitats are considered priority in the Colorado or Wyoming SWAPs or PIF Bird Conservation Plans: grassland, greasewood flat, herbaceous wetland, open water, sagebrush shrubland, saltbush shrubland, and woody riparian and wetlands.

[3] The species is designated as climate endangered in the 2014 Audubon Birds and Climate Change Report.

BCC and PIF Species

A total of 58 BCC and/or PIF species have potential to inhabit one or more of the vegetation communities defined for the Region I analysis area. **Tables 3.22-7** and **3.22-8** present these species and their potential for occurrence in suitable nesting, foraging, and winter habitat in Region I. These species were identified by the USFWS and Partners in Flight as species that, without additional conservation actions, are likely to become candidates for listing under the ESA. Each species designated has a unique set of habitat requirements, range of potential threats to its populations and habitat, and documented understanding of sensitivity to direct and indirect impacts from anthropogenic development. Therefore, this analysis makes no further attempt at characterizing these species with respect to differences in conservation priority.

Sources for occurrence potential information for Region I include:

- Wyoming Natural Diversity Database;
- Colorado Natural Heritage Program;
- Wyoming Game and Fish Department State Wildlife Action Plan (WGFD 2010);
- Colorado's Comprehensive Wildlife Conservation Strategy and Wildlife Action Plans (CDOW 2006);
- Birds of North America Online (specific authors and dates for each species account);
- NatureServe Explorer 2014; and
- Professional knowledge provided by agency biologists.

Table 3.22-7 Region I BCC and PIF Species Habitat Associations and Potential for Occurrence

Species State Status	Agricultural Land	Cliff and Canyon	Conifer Forest	Deciduous Forest	Grassland[2]	Greasewood Flat[1]	Herbaceous Wetland[1]	Montane Grassland	Montane Shrubland	Open Water[1]	Pinyon-juniper Woodland	Sagebrush Shrubland[21]	Saltbush Shrubland[21]	Woody Riparian and Wetlands[21]
Eared Grebe[2] CO - SGCN							Low N, F			Low F				
Least Bittern[2]							Low N, F							
Bald Eagle[2] CO – SGCN										Moderate F				Moderate N, W
Swainson's Hawk[2] CO – SGCN	Low N, F				Low N, F			Low N, F	Low F		Low F	Low F	Low F	
Ferruginous hawk[2] CO – SGCN	High F, W	High N			High N, F, W			High N, F, W	High F			High F	High F	
Rough-legged Hawk	Low F, W				Low F, W			Low F, W						
Golden Eagle[2] CO - SGCN	High F, W	High N, F			High N, F, W			High N, F, W	High F, W		High N, F, W	High F, W	High F, W	
Peregrine Falcon[3] CO – SGCN		Low N, F			Low F		Low F	Low F	Low F		Low F		Low F	Low F
Prairie Falcon[2] CO – SGCN		Low N, F			Low F, W			Low F, W	Low F			Low F	Low F	
Dusky Grouse[3] CO – SGCN			Low N, F, W	Low N, F, W					Low N, F					
Columbian Sharp-tailed Grouse[2] CO – SGCN					Low F	Low F	Low F, W	Low F	Low N, F, W			Low N, F, W	Low F, W	Low F, W
Gambel's Quail	Low F, W				Low F, W	Low F, W								
Mountain Plover[3] CO – SGCN	High N, F				High N, F			High N, F						

Table 3.22-7 Region I BCC and PIF Species Habitat Associations and Potential for Occurrence

Species State Status	Agricultural Land	Cliff and Canyon	Conifer Forest	Deciduous Forest	Grassland[2]	Greasewood Flat[1]	Herbaceous Wetland[1]	Montane Grassland	Montane Shrubland	Open Water[1]	Pinyon-juniper Woodland	Sagebrush Shrubland[21]	Saltbush Shrubland[21]	Woody Riparian and Wetlands[21]
Upland Sandpiper CO –SGCN; WY SGCN, Tier II					Low N, F									
Long-billed Curlew[2] CO – SGCN	Low F				Low N, F		Low F			Low F				Low F
Flammulated Owl CO - SGCN			Low N, F											
Short-eared Owl[2] CO – SGCN	Moderate F, W				Moderate N, F, W		Moderate F, W	Moderate F						
Burrowing Owl[2] CO – SGCN	High N, F				High N, F			Low N, F				High N, F	High N, F	
White-throated Swift[3] CO - SGCN		Low N	Low F	Low F					Low F					
Calliope Hummingbird[3]			Low N, F	Low F				Low F	Low F					Low F
Black Swift CO – SGCN; UT SGCN -Tier II		Low N	Low F	Low F				Low F	Low F					Low F
Lewis's Woodpecker[3] CO – SGCN			Low N, F, W	Low F, W							Low F, W			Low N, F, W
Williamson's Sapsucker[2] CO – SGCN			Moderate N, F	Moderate F										
Red-naped Sapsucker[2] CO - SGCN			Low N, F, W	Low N, F, W										Low N, F, W
Olive-sided Flycatcher CO - SGCN			Low N, F											
Willow Flycatcher[3] WY SGCN, Tier III														Low N, F

Table 3.22-7 Region I BCC and PIF Species Habitat Associations and Potential for Occurrence

Species State Status	Agricultural Land	Cliff and Canyon	Conifer Forest	Deciduous Forest	Grassland[2]	Greasewood Flat[1]	Herbaceous Wetland[1]	Montane Grassland	Montane Shrubland	Open Water[1]	Pinyon-juniper Woodland	Sagebrush Shrubland[21]	Saltbush Shrubland[21]	Woody Riparian and Wetlands[21]
Gray Flycatcher[3] CO - SGCN									Low F		Low N, F	Low N, F		
Dusky Flycatcher[3] CO - SGCN									Low N, F		Low N, F	Low N, F		Low N, F
Loggerhead Shrike CO - SGCN	High N, F, W				High N, F, W	High N, F, W			Low N, F, W		High N, F, W	High N, F, W	High N, F, W	High N, F, W
Northern Shrike	Low F, W		Low F, W	Low F, W					Low F, W			Low F, W		Low F, W
Gray Vireo[3] CO – SGCN									Low N, F		Low N, F			
Gray Jay			Low N, F, W											
Steller's Jay			Moderate N, F, W	Moderate N, F, W					Moderate N, F, W					
Western Scrub-jay WY – Tier II									Moderate N, F, W		Moderate N, F, W			
Pinyon Jay[3] CO - SGCN			Moderate N, F, W						Moderate N, F, W		Moderate N, F, W			
Clark's Nutcracker[2]			Low N, F, W								Low N, F, W			
Juniper Titmouse[3] CO – SGCN; WY SGCN, Tier II											Moderate N, F, W			
Veery[3] CO - SGCN														Low N, F

Table 3.22-7 Region I BCC and PIF Species Habitat Associations and Potential for Occurrence

Species State Status	Agricultural Land	Cliff and Canyon	Conifer Forest	Deciduous Forest	Grassland[2]	Greasewood Flat[1]	Herbaceous Wetland[1]	Montane Grassland	Montane Shrubland	Open Water[1]	Pinyon-juniper Woodland	Sagebrush Shrubland[21]	Saltbush Shrubland[21]	Woody Riparian and Wetlands[21]
Mountain Bluebird[3]	Low N, F							Low N, F	Low N, F		Low N, F			
Sage Thrasher[3] WY SGCN, Tier II												High N, F, W		
Bohemian Waxwing[2]			Low F	Low F										
Virginia's Warbler[3] CO – SGCN									Moderate N, F		Low N, F			
Yellow Warbler														Moderate N, F
Black-throated Gray Warbler[3] CO – SGCN											Moderate N, F			
Green-tailed Towhee[2]									Moderate N, F			Moderate N, F		Moderate N, F
American Tree Sparrow	Moderate F				Moderate F, W				Moderate F, W					
Brewer's Sparrow[3] CO – SGCN						Low N, F						High N, F	Low N, F	
Sage Sparrow[2] CO – SGCN												High N, F		
Grasshopper Sparrow WY SGCN, Tier II					Moderate N, F									
Fox Sparrow									Moderate N, F					Moderate N, F
Lincoln's Sparrow									Moderate N, F					Moderate N, F

Table 3.22-7 Region I BCC and PIF Species Habitat Associations and Potential for Occurrence

Species State Status	Agricultural Land	Cliff and Canyon	Conifer Forest	Deciduous Forest	Grassland[2]	Greasewood Flat[1]	Herbaceous Wetland[1]	Montane Grassland	Montane Shrubland	Open Water[1]	Pinyon-juniper Woodland	Sagebrush Shrubland[21]	Saltbush Shrubland[21]	Woody Riparian and Wetlands[21]
Chestnut-collared Longspur[2] CO –SGCN; WY SGCN, Tier II					Moderate N, F									
Yellow-headed Blackbird[2]	Moderate F						Moderate N, F							Moderate F
Black Rosy-finch[2] CO – SGCN	Low F, W	Low N, F, W						Low F, W	Low F, W					
Brown-capped Rosy-finch[3] CO - SGCN		Low N, F												
Pine Grosbeak[2]			Low N, F, W											
Cassin's Finch[3] CO - SGCN			Low N, F, W								Low F, W			
White-winged Crossbill[3]			Low N, F, W											
Total BCC and PIF Species per Habitat	**15**	**8**	**18**	**10**	**17**	**4**	**7**	**14**	**25**	**3**	**16**	**14**	**9**	**18**

[1] Habitat types are considered priority in either Colorado or Wyoming SWAPs or PIF Bird Conservation Plans.

[2] The species is designated as climate endangered in the 2014 Audubon Birds and Climate Change Report.

[3] The species is designated as climate threatened in the 2014 Audubon Birds and Climate Change Report.

Note: N = nesting habitat; F = foraging habitat; W = winter habitat.

Table 3.22-8 Region I BCC and PIF Species and Habitat Association Summary

Vegetation Community	Species with High Potential to Nest	Species with High Potential to Forage	Species with High Potential to Winter	Species with Moderate Potential to Nest	Species with Moderate Potential to Forage	Species with Moderate Potential to Winter	Species with Low Potential to Nest	Species with Low Potential to Forage	Species with Low Potential to Winter	Total Region I BCC and PIF Species Per Habitat
Agricultural Land	3	5	3	–	3	1	2	7	4	15
Cliff and Canyon	2	1	–	–	–	–	6	4	1	8
Conifer Forest	–	–	–	3	3	2	11	15	9	18
Deciduous Forest	–	–	–	1	2	1	2	8	4	10
Grassland[1]	5	5	3	3	4	2	3	8	3	17
Greasewood Flat[1]	1	1	1	–	–	–	1	3	1	4
Herbaceous Wetland[1]	–	–	–	1	2	1	2	5	1	7
Montane Grassland[1]	3	3	2	–	1	–	3	10	3	14
Montane Shrubland	–	2	1	7	8	4	6	15	4	25
Open Water[1]	–	–	–	–	1	–	–	2	–	3
Pinyon-Juniper Woodland	2	2	2	4	4	3	6	10	3	16
Sagebrush Shrubland[1]	5	7	3	1	1	–	3	6	2	14
Saltbush Shrubland[1]	2	4	2	–	–	–	1	5	1	9
Woody Riparian and Wetlands[1]	1	1	1	5	5	1	5	11	4	18

[1] Habitats are considered priority in Colorado or Wyoming SWAPs or PIF Bird Conservation Plans.

Note: Species can nest, forage, and winter in multiple habitats; therefore, the columns cannot be summed due to duplication.

3.22.5.3 Region II

Migratory Bird Habitat

The Region II analysis area extends from northwestern Colorado to the IPP located in western Utah. Vegetation communities in Region II are diverse, with the dominant community types consisting of sagebrush shrubland, saltbush shrubland, and pinyon-juniper woodland. All other vegetation communities except ephemeral wash also occur in Region II. A description of vegetation communities is presented in Section 3.5, Vegetation.

Region II provides a diverse array of migratory bird habitats that vary by existing vegetation communities, landform types, and quality of available resources. This analysis focuses on two specific types of priority habitats identified for migratory birds: vegetation communities identified as priority habitat in the State Wildlife Action Plans (SWAPs) for Colorado and Utah and areas designated as IBAs and BHCAs in Region II. Details regarding BHCAs and associated species and Audubon IBAs are discussed below.

Region II priority habitats are determined from the SWAPs and PIF Bird Conservation Plans for Colorado and Utah (CDOW 2006; PIF 2002, 2000; Sutter et al. 2005). All Region II alternatives in Colorado are located within sagebrush shrubland or riparian habitats and both of these communities are identified as priority habitats in the Colorado SWAP (CDOW 2006). Priority habitats within the Region II analysis area and identified in the Utah SWAP (Sutter et al. 2005) include aspen forest and woodland, desert shrubland, grassland, herbaceous wetland, montane grassland, montane shrubland, open water, pinyon-juniper woodland, sagebrush shrubland, and woody riparian and wetlands (Sutter et al. 2005).

It is important to note that approximately 20 percent of the Region II analysis area is located within sagebrush shrubland habitat. Potential impacts to these areas are quantitatively assessed in, and are anticipated to be fully offset through, TransWest's Greater Sage-Grouse Habitat Equivalency Analysis, Mitigation, and Monitoring Plan that is being developed in coordination with the BLM and Western as discussed in Section 3.8.6.2, Impacts Common to All Alternative Routes and Associated Components. It is anticipated that BCC, PIF, and other migratory bird species that inhabit sagebrush shrubland communities will benefit from this mitigation.

BHCAs and Representative Priority Bird Species

The Region II analysis area is within USFWS Bird Conservation Regions 16 (Southern Rockies/Colorado Plateau) and 9 (Great Basin). **Table 3.22-9** and **Figure 3.22-6** present the 14 BHCAs found in the Region II potential disturbance areas and several representative bird species for each (Parrish et al. 2002; USFWS 2008; Utah Steering Committee IWJV 2005). Within Region II, 29 BHCAs are located within the analysis area comprising a total of 1,963,910 acres.

Audubon Important Bird Areas

A total of five Audubon IBAs are within or in proximity to the Region II analysis area. **Figure 3.22-7** presents IBAs in the Region II analysis area.

Ouray National Wildlife Refuge IBA

The Ouray National Wildlife Refuge IBA is located in the Uintah Basin, in Uintah County, Utah, and is located approximately 1 mile from the Region I and II potential disturbance areas. The site consists of 7,325 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, western yellow-billed cuckoo, and black-throated gray warbler populations. The wetland habitat supports nesting populations of American avocet, black-necked stilt, and American white pelican. The shrubsteppe habitat supports ferruginous hawk, greater sage-grouse, Brewer's sparrow, and sage sparrow (National Audubon Society 2011).

Table 3.22-9 Region II BHCAs and Representative Priority Bird Species

State	BCR	BHCA Number and Name	Primary Habitats	Representative Priority Bird Species[1,2]
Colorado	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]
Colorado	16	30 – White River	Open water Woody riparian and wetlands	Barrow's goldeneye[3] Veery[3] Northern harrier[3] Lewis's woodpecker[3]
Colorado	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] Pinyon jay
Utah	9	16 – Utah Lake, Mona Lake, Tintic Valley	Open water Herbaceous wetland Woody riparian and wetlands Sagebrush shrubland Saltbush shrubland	Sage-grouse[3] Brewer's sparrow[3] Cinnamon teal Long-billed curlew[3] American avocet[3] Black-necked stilt[3] American white pelican[3]
Utah	16	36 – Summerhouse Spring	Wetland and associated uplands	Sage-grouse[3] Common snipe
Utah	16	27 – Emma Park	Wet meadow	Sage-grouse[3] Common snipe Long-billed curlew[3] Shorebirds
Utah	16	20 – Strawberry Reservoir Watershed	Open water Woody riparian and wetlands Montane shrubland	Sage-grouse[3] Brewer's sparrow[3] Sage sparrow[3] Cinnamon teal
Utah	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]
Utah	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]
Utah	16	29 – Lower Nebo Creek Drainage	Woody riparian and wetlands Herbaceous wetland	Lewis's woodpecker[3] Cooper's hawk
Utah	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]
Utah	9	31 – Delta	Open water Herbaceous wetland	Cinnamon teal Long-billed curlew[3] American avocet[3] Black-necked stilt[3]

Table 3.22-9 Region II BHCAs and Representative Priority Bird Species

State	BCR	BHCA Number and Name	Primary Habitats	Representative Priority Bird Species[1,2]
Utah	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]
Utah	16	41 – Cisco Desert	Desert shrub	Bald eagle Golden eagle Ferruginous hawk[3] Burrowing owl[3] Long-billed curlew[2]

1 **Table 3.22-3** presents a comprehensive list of BCC and PIF species potentially inhabiting the analysis area, their nesting, foraging, and winter habitat associations, and potential for occurrence within Project regions.

2 Many BCC and PIF species also are special status species and are presented in further detail in Section 3.8, Special Status Wildlife Species.

3 PIF Priority Bird Species may differ between states depending on abundance and threats to the species.

Pelican Lake IBA

Pelican Lake IBA is located approximately 2 miles from the Region I and II potential disturbance area in Uintah County, Utah. The IBA consists of a 1,060-acre wetland complex 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 less than 1 mile from the Region II potential disturbance areas in Mesa County, Colorado. The IBA consists of a 367-acre Recreation Management Area. The vegetation is characterized by pinyon-juniper woodland and sagebrush shrubland in high desert terrain. A small portion of the site consists of lowland riparian habitat. Rabbit Valley Recreation Management Area IBA is especially noted for providing habitat for gray vireos and Scott's orioles (National Audubon Society 2011).

Upper Strawberry Watershed IBA

The Upper Strawberry Watershed IBA is partially within the Region II potential disturbance area in Wasatch County, Utah. The IBA consists of a 126,932-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. Bald eagles nest in the Strawberry Valley. Numerous Neotropical migrants nest or regularly occur in the Upper Strawberry Watershed IBA. These include the Brewer's sparrow and broad-tailed hummingbird. Strawberry Reservoir provides significant habitat for Caspian terns (as many as 60). An estimated 1,200 western grebes and 100 Clark's grebes have been documented on Strawberry Reservoir. These numbers approximate 1 percent of the total North American populations 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 less than 1 mile from the Region II potential disturbance area in Mesa County, Colorado. This IBA consists of a 176,421-acre assemblage of habitats 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, winter, and stopover habitat for approximately 75 percent of the state's avian species. Nearly 300 species have been recorded at this IBA, including nearly 70 breeding species and over 70 wintering species (National Audubon Society 2011).

Migratory Bird Species

A variety of migratory bird species inhabits the Region II analysis area. The range of species diversity reported for the 14 counties traversed by Region II alternatives is 209 to 330 migratory bird species (eBird 2014). Species that are designated as special status are presented in Section 3.8, Special Status Wildlife Species. **Figure 3.22-8** presents estimated breeding seasons for avian species groups and BCC and PIF species within those groups for Region II.

Table 3.22-10 presents raptor species with potential to occur in the Region II analysis area (eBird 2014). Common ravens are not considered raptors but ravens may utilize historic raptor nests and, conversely, raptors may add to and/or utilize historic raven nests in order to make them suitable for nesting. Special status raptor species that occur in Region II are addressed in Section 3.8.5.7.

BCC and PIF Species

A total of 58 BCC and PIF species have potential to inhabit one or more of the vegetation communities defined for Region II. **Tables 3.22-11** and **3.22-12** present these species and their potential for occurrence in suitable nesting, foraging, and winter habitat. All vegetation communities except ephemeral wash occur in the Region II analysis area.

Sources for Region II occurrence potential information include:

- Colorado Natural Heritage Program;
- Utah Natural Heritage Program;
- Utah Comprehensive Wildlife Conservation Strategy (Sutter et al. 2005);
- Colorado Comprehensive Wildlife Conservation Strategy (CDOW 2006);
- Birds of North America Online (specific authors and dates for each species account);
- NatureServe Explorer 2014; and
- Professional knowledge provided by agency biologists.

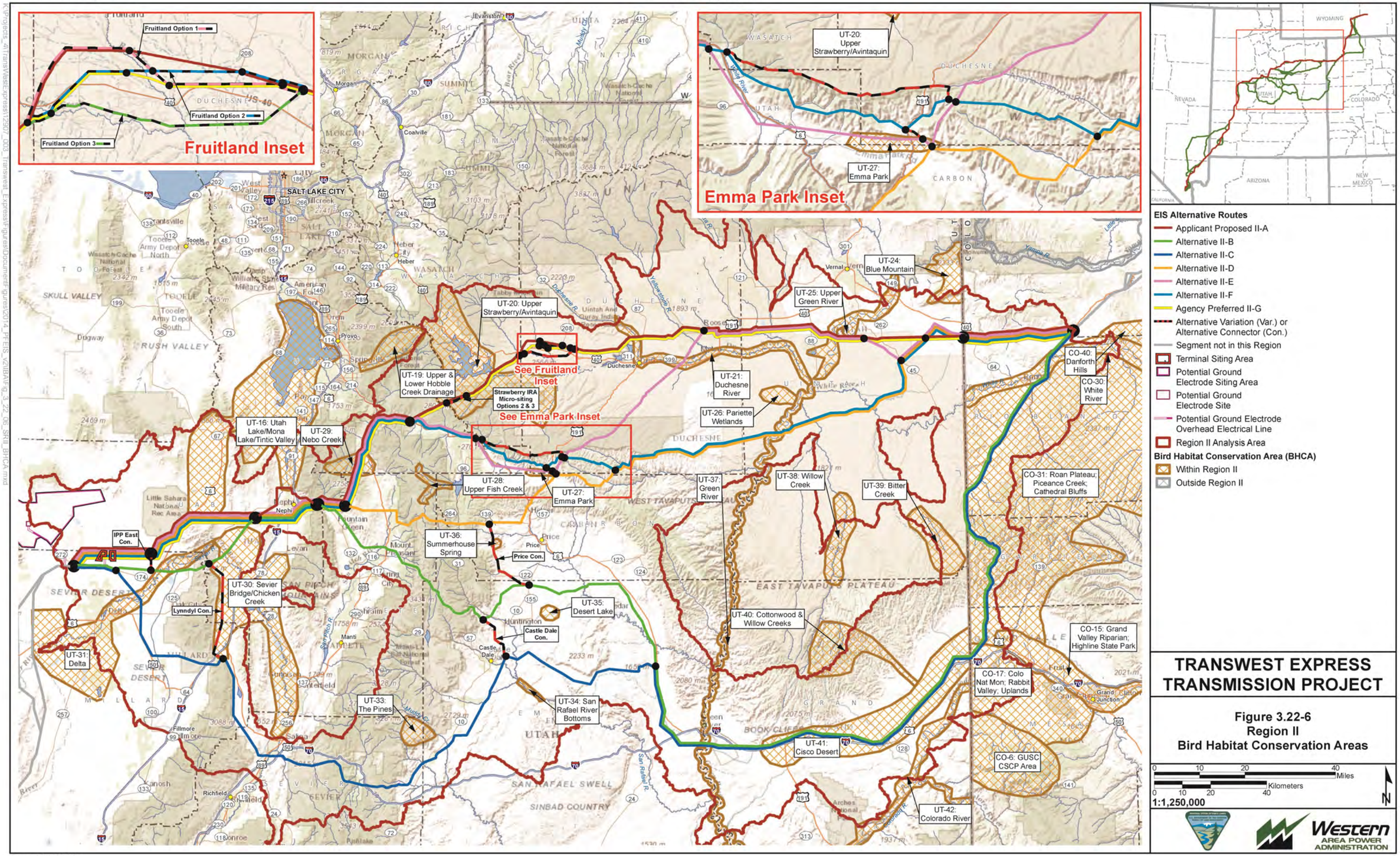


Figure 3.22-6
Region II
Bird Habitat Conservation Areas

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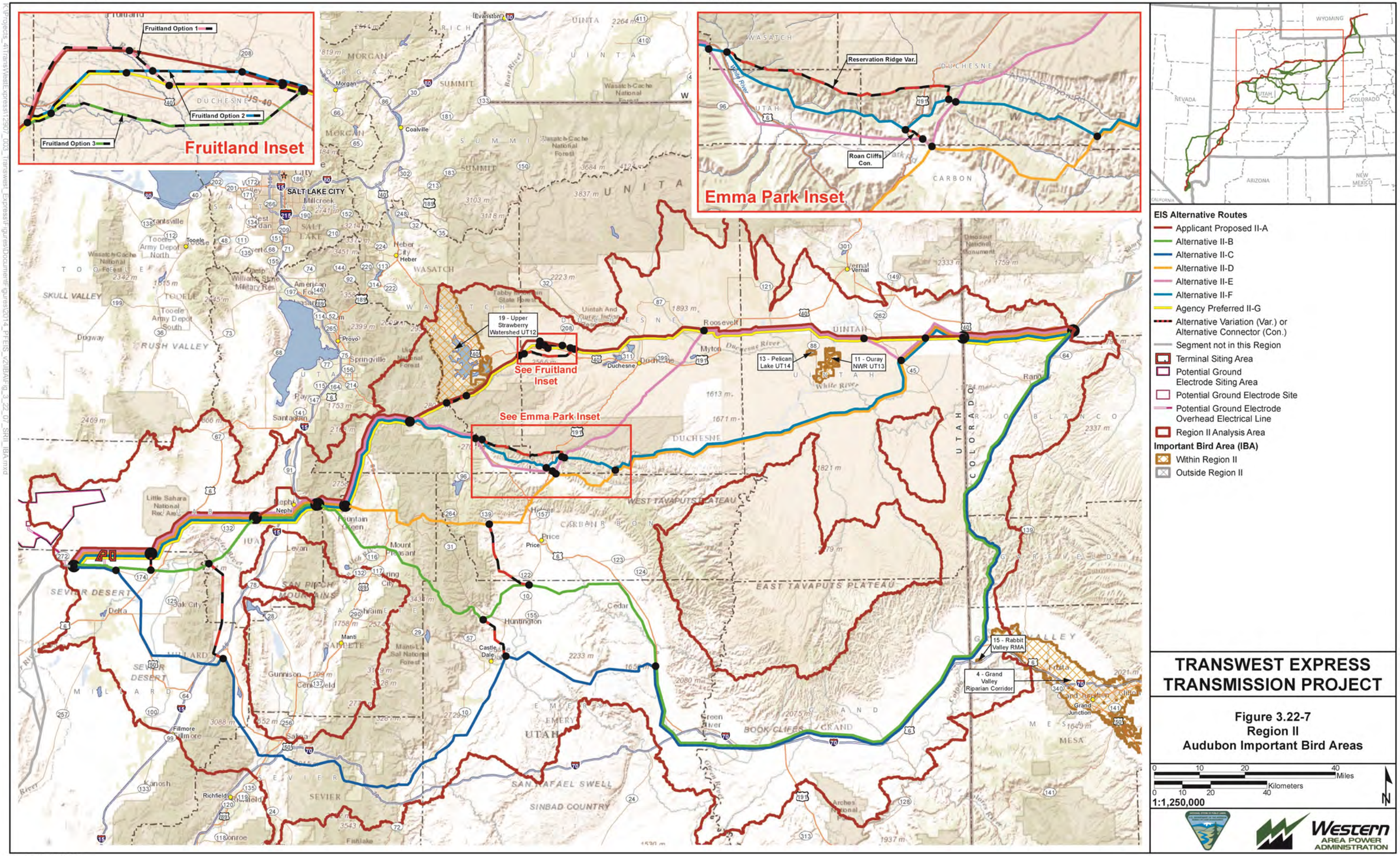

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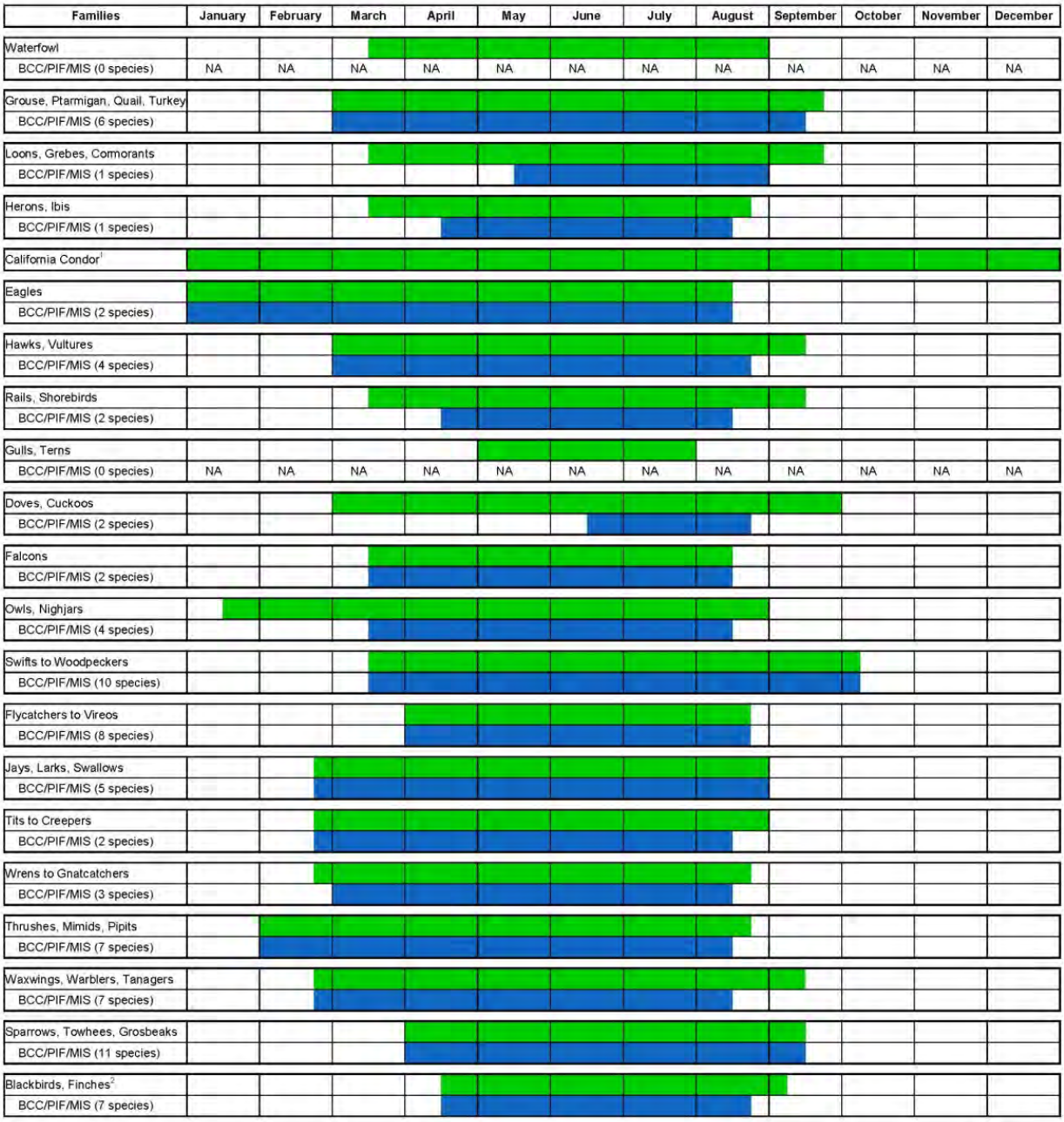


[1] Breeding season for the California Condor begins in mid-February and successful nesting takes 2 years.

[2] Excludes crossbills which may breed in any month.

Source: Baicich and Harrison 1997; Nelson and Leukering 2007.

Figure 3.22-8 Approximate Breeding Seasons for Avian Species in Regions II and III

Table 3.22-10 Region II Raptor Species Potentially Occurring within the Migratory Bird Analysis Area and their Habitat Associations

Common Name (*Scientific name*)	BCC or PIF	Region II Breeding, Foraging, and Winter Habitat Associations[1,2]
Osprey[3] (*Pandion haliaetus*)		Open water, woody riparian and wetlands
Bald Eagle[3] (*Haliaeetus leucocephalus*)	BCC; PIF	Open water, woody riparian and wetlands
Northern Harrier[3] (*Circus cyaneus*)		Agricultural land, grassland, herbaceous wetland, montane grassland, tundra, woody riparian and wetlands
Sharp-shinned Hawk (*Accipiter striatus*)		Agricultural land, aspen forest and woodland, conifer forest, deciduous forest, woody riparian and wetlands
Cooper's Hawk (*Accipiter cooperii*)		Agricultural land, aspen forest and woodland, conifer forest, deciduous forest, woody riparian and wetlands
Northern Goshawk (*Accipiter gentilis*)		Aspen forest and woodland, conifer forest
Common Black-hawk (*Buteogallus anthracinus*)		Woody riparian and wetlands
Red-shouldered Hawk (*Buteo lineatus*)		Aspen forest and woodland, conifer forest, deciduous forest, woody riparian and wetlands
Broad-winged Hawk[3] (*Buteo platypterus*)		Aspen forest and woodland, conifer forest, deciduous forest, woody riparian and wetlands
Swainson's Hawk[3] (*Buteo swainsoni*)	BCC	Agricultural land, desert shrubland, grassland, montane grassland, montane shrubland, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland
Zone-tailed Hawk[4] (*Buteo albonotatus*)		Cliff and canyon, conifer forest, desert shrubland, montane shrubland, woody riparian and wetlands
Red-tailed Hawk (*Buteo jamaicensis*)		Agricultural land, aspen forest and woodland, cliff and canyon, conifer forest, deciduous forest, desert shrubland, grassland, greasewood flat, herbaceous wetland, montane grassland, montane shrubland, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, woody riparian and wetlands
Ferruginous Hawk[3] (*Buteo regalis*)	BCC	Agricultural land, desert shrubland, grassland, montane grassland, montane shrubland, sagebrush shrubland, saltbush shrubland
Rough-legged Hawk (*Buteo lagopus*)	PIF	Agricultural land, grassland, montane grassland
Golden Eagle[3] (*Aquila chrysaetos*)	BCC	Agricultural land, cliff and canyon, desert shrubland, grassland, montane grassland, montane shrubland, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, tundra
American Kestrel[3] (*Falco sparverius*)		Agricultural land, desert shrubland, grassland, greasewood flat, herbaceous wetland, montane grassland, montane shrubland, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, woody riparian and wetlands
Merlin[3] (*Falco* columbarius)		Agricultural land, aspen forest and woodlands, conifer forest, deciduous forest, grassland, montane grassland, woody riparian and wetlands
Peregrine Falcon[3] (Falco peregrinus)	BCC; PIF	Cliff and canyon, desert shrubland, grassland, herbaceous wetland, montane grassland, montane shrubland, pinyon-juniper woodland, saltbush shrubland, woody riparian and wetlands
Prairie Falcon[3] (*Falco mexicanus*)	BCC	Cliff and canyon, desert shrubland, grassland, montane grassland, montane shrubland, sagebrush shrubland, saltbush shrubland
Barn Owl[4] (*Tyto alba*)		Agricultural land, cliff and canyon, desert shrubland, grassland, herbaceous wetland, montane grassland
Flammulated Owl (*Otus flammeolus*)	BCC; PIF	Aspen forest and woodland, conifer forest

Table 3.22-10 Region II Raptor Species Potentially Occurring within the Migratory Bird Analysis Area and their Habitat Associations

Common Name (*Scientific name*)	BCC or PIF	Region II Breeding, Foraging, and Winter Habitat Associations[1,2]
Western Screech-owl[3] (*Megascops kennicottii*)		Aspen forest and woodland, deciduous forest, woody riparian and wetlands
Great Horned Owl (*Bubo virginianus*)		Agricultural land, aspen forest and woodland, conifer forest, deciduous forest, desert shrubland, grassland, greasewood flat, herbaceous wetland, montane grassland, montane shrubland, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, woody riparian and wetlands
Northern Pygmy Owl[3] (*Glaucidium californicum*)		Aspen forest and woodlands, conifer forest, deciduous forest, woody riparian and wetlands
Burrowing Owl[3] (*Athene cunicularia*)	BCC	Agricultural land, desert shrubland, grassland, montane grassland, sagebrush shrubland, saltbush shrubland
Long-eared Owl[3] (*Asio otus*)		Agricultural land, aspen forest and woodland, deciduous forest, grassland, montane grassland, pinyon-juniper woodland, woody riparian and wetlands
Short-eared Owl[3] (*Asio flammeus*)	PIF	Agricultural land, grassland, herbaceous wetland, montane grassland
Boreal Owl[3] (*Aegolius funereus*)		Aspen forest and woodland, conifer forest
Northern Saw-whet Owl[3] (*Aegolius acadicus*)		Aspen forest and woodland, conifer forest, deciduous forest, woody riparian and wetlands
Common Raven[3] (*Corvus corax*)		Agricultural land, aspen forest and woodland, cliff and canyon, conifer forest, deciduous forest, desert shrubland, grassland, greasewood flat, herbaceous wetland, montane grassland, montane shrubland, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, tundra, woody riparian and wetlands

[1] Habitat Association refers to vegetation communities, as presented in **Table 3.22-1**.

[2] The following habitats are considered priority in the Colorado or Utah SWAPs or PIF Bird Conservation Plans: aspen forest and woodland, grassland, herbaceous wetland, montane grassland, montane shrubland, open water, pinyon-juniper woodland, sagebrush shrubland, and woody riparian and wetlands.

[3] The species is designated as climate endangered in the 2014 Audubon Birds and Climate Change Report.

[4] The species is designated as climate threatened in the 2014 Audubon Birds and Climate Change Report.

Table 3.22-11 Region II BCC and PIF Species Habitat Associations and Potential for Occurrence

Species State Status	Agricultural Land	Aspen Forest and Woodland[1]	Cliff and Canyon	Conifer Forest	Deciduous Forest	Desert Shrubland	Grassland[2]	Greasewood Flat	Herbaceous Wetland[1]	Montane Grassland[1]	Montane Shrubland[1]	Open Water[1]	Pinyon-juniper Woodland[1]	Sagebrush Shrubland[1]	Saltbush Shrubland	Woody Riparian and Wetlands[1]
Eared Grebe[2] CO – SGCN									Low N, F			Low F				
Least Bittern[2]									Low N, F							
Bald Eagle[2] CO – SGCN; UT SGCN, Tier I												High F				High N, W
Swainson's Hawk[2] CO – SGCN	High N, F					High F	High N, F			High N, F	High F		High F	High F	High F	
Ferruginous Hawk[2] CO – SGCN; UT SGCN, Tier II	High F, W		High N, F			High F	High N, F, W			High N, F, W	High F			High F	High F	
Rough–legged Hawk	Low F, W						Low F, W			Low F, W						
Golden Eagle[2] CO – SGCN	Low F, W		Low N, F			Low F, W	Low N, F, W			Low N, F, W	Low F, W		Low N, F, W	Low F, W	Low F, W	
Peregrine Falcon[3] CO – SGCN; UT SGCN, Tier III			Moderate N, F			Moderate F	Moderate F		Moderate F	Moderate F	Moderate F		Moderate F		Moderate F	Moderate F
Prairie Falcon[2] CO – SGCN			Moderate N, F			Moderate F	Moderate F, W			Moderate F, W	Moderate F			Moderate F	Moderate F	
Dusky Grouse[3] CO – SGCN		Low N, F, W		Low N, F, W	Low N, F, W						Low N, F					
Columbian Sharp–tailed Grouse[2] CO – SGCN; UT SGCN, Tier II							Low F	Low F	Low F, W	Low F	Low N, F, W			Low N, F, W	Low F, W	Low F, W
Gambel's Quail UT SGCN, Tier III	Low F, W					Low N, F, W	Low F, W	Low F, W								
Mountain Plover[3] CO – SGCN; UT SGCN, Tier III	Moderate N, F						Moderate N, F			Moderate N, F						

Table 3.22-11 Region II BCC and PIF Species Habitat Associations and Potential for Occurrence

Species State Status	Agricultural Land	Aspen Forest and Woodland[1]	Cliff and Canyon	Conifer Forest	Deciduous Forest	Desert Shrubland	Grassland[2]	Greasewood Flat	Herbaceous Wetland[1]	Montane Grassland[1]	Montane Shrubland[1]	Open Water[1]	Pinyon-juniper Woodland[1]	Sagebrush Shrubland[1]	Saltbush Shrubland	Woody Riparian and Wetlands[1]
Long–billed Curlew[2] CO – SGCN; UT SGCN, Tier II	High F						High N, F		High F			Moderate F				High F
Flammulated Owl CO – SGCN		Moderate N, F		Moderate N, F												
Short–eared Owl[2] CO – SGCN; UT SGCN, Tier II	Moderate F, W						Moderate N, F, W		Moderate F, W	Moderate F						
Burrowing Owl[2] CO – SGCN; UT SGCN, Tier II	High N, F					High N, F	High N, F			Low N, F				High N, F	High N, F	
White–throated Swift[3] CO – SGCN		Low F	Low N							Low F	Low F					
Calliope Hummingbird[3]				Low N, F	Low F					Low F	Low F					Low F
Black Swift CO – SGCN; UT SGCN –Tier II		Low F	Low N	Low F	Low F					Low F	Low F					Low F
Lewis's Woodpecker[3] CO – SGCN; UT SGCN, Tier II		High F, W		High N, F, W	High F, W								High F, W			High N, F, W
Williamson's Sapsucker[2] CO – SGCN; UT SGCN, Tier III		Moderate F		Moderate N, F	Moderate F											
Red–naped Sapsucker[2] CO – SGCN		Low N, F, W		Low N, F, W	Low N, F, W											Low N, F, W
Olive–sided Flycatcher CO – SGCN				Low N, F												
Willow Flycatcher[3] WY SGCN, Tier III																Low N, F
Gray Flycatcher[3] CO – SGCN											Moderate F		Moderate N, F	Moderate N, F		

Table 3.22-11 Region II BCC and PIF Species Habitat Associations and Potential for Occurrence

Species State Status	Agricultural Land	Aspen Forest and Woodland[1]	Cliff and Canyon	Conifer Forest	Deciduous Forest	Desert Shrubland	Grassland[2]	Greasewood Flat	Herbaceous Wetland[1]	Montane Grassland[1]	Montane Shrubland[1]	Open Water[1]	Pinyon-juniper Woodland[1]	Sagebrush Shrubland[1]	Saltbush Shrubland	Woody Riparian and Wetlands[1]
Dusky Flycatcher[3] CO – SGCN											Low N, F		Low N, F	Low N, F		Low N, F
Loggerhead Shrike CO – SGCN	High N, F, W						High N, F, W	High N, F, W			Low N, F, W		High N, F, W	High N, F, W	High N, F, W	High N, F, W
Northern Shrike	Low F, W			Low W	Low W						Low F, W			Low F, W		Low F, W
Gray Vireo[3] CO – SGCN; UT SGCN, Tier III						Moderate N, F					Moderate N, F		Moderate N, F			
Gray Jay				Low N, F, W												
Steller's Jay		Moderate N, F, W		Moderate N, F, W	Moderate N, F, W						Moderate N, F, W					
Western Scrub–jay											Moderate N, F, W		Moderate N, F, W			
Pinyon Jay[3] CO – SGCN				Moderate N, F, W							Moderate N, F, W		Moderate N, F, W			
Clark's Nutcracker[2]				Low N, F, W									Low N, F, W			
Juniper Titmouse[3] CO – SGCN													Moderate N, F, W			
Winter Wren[3]		Low N, F		Low N, F	Low N, F						Low N, F					Low N, F
Mountain Bluebird[3]	Low N, F	Low N, F								Low N, F	Low N, F		Low N, F			
Sage Thrasher[3] UT SGCN, Tier III														Low N, F, W		

Table 3.22-11 Region II BCC and PIF Species Habitat Associations and Potential for Occurrence

Species State Status	Agricultural Land	Aspen Forest and Woodland[1]	Cliff and Canyon	Conifer Forest	Deciduous Forest	Desert Shrubland	Grassland[2]	Greasewood Flat	Herbaceous Wetland[1]	Montane Grassland[1]	Montane Shrubland[1]	Open Water[1]	Pinyon-juniper Woodland[1]	Sagebrush Shrubland[1]	Saltbush Shrubland	Woody Riparian and Wetlands[1]
Bohemian Waxwing[2]		Low F		Low F	Low F											
Virginia's Warbler[3] CO – SGCN; UT SGCN, Tier III											Moderate N, F		Low N, F			
Yellow Warbler		Low N, F														Moderate N, F
Black–throated Gray Warbler[3] CO – SGCN; UT SGCN, Tier III													Moderate N, F			
Green–tailed Towhee[2]											Moderate N, F			Moderate N, F		Moderate N, F
American Tree Sparrow	Moderate F						Moderate F, W				Moderate F, W					
Brewer's Sparrow[3] CO – SGCN; UT SGCN, Tier III								Low N, F						Moderate N, F	Low N, F	
Black–throated Sparrow						Moderate N, F		Moderate N, F						Moderate N, F		
Sage Sparrow[2] CO – SGCN; UT SGCN, Tier III														High N, F		
Fox Sparrow											Low N, F					Low N, F
Lincoln's Sparrow		Moderate N, F									Moderate N, F					Moderate N, F
Indigo Bunting	Low N, F				Low N, F						Low N, F					
Yellow–headed Blackbird[2]	Moderate F								Moderate N, F							Moderate F

Table 3.22-11 Region II BCC and PIF Species Habitat Associations and Potential for Occurrence

Species State Status	Agricultural Land	Aspen Forest and Woodland[1]	Cliff and Canyon	Conifer Forest	Deciduous Forest	Desert Shrubland	Grassland[2]	Greasewood Flat	Herbaceous Wetland[1]	Montane Grassland[1]	Montane Shrubland[1]	Open Water[1]	Pinyon-juniper Woodland[1]	Sagebrush Shrubland[1]	Saltbush Shrubland	Woody Riparian and Wetlands[1]
Scott's Oriole						Moderate N, F							Moderate N, F			
Black Rosy–finch[2] CO – SGCN; UT SGCN, Tier III	Low F		Low N, F							Low F	Low F					
Brown–capped Rosy–finch[3] CO – SGCN			Low N, F													
Pine Grosbeak[2]		Low F, W		Low N, F, W												
Cassin's Finch[3] CO – SGCN				Low N, F, W									Low F, W			
White–winged Crossbill[3]				Low N, F, W												
Total BCC and PIF Species Per Habitat	**16**	**14**	**8**	**18**	**11**	**10**	**14**	**5**	**7**	**15**	**27**	**3**	**17**	**15**	**9**	**18**

[1] Habitat types are considered priority in either Colorado or Utah SWAPs or PIF Bird Conservation Plans.

[2] The species is designated as climate endangered in the 2014 Audubon Birds and Climate Change Report.

[3] The species is designated as climate threatened in the 2014 Audubon Birds and Climate Change Report.

Note: N = nesting habitat; F = foraging habitat; W = winter habitat.

Table 3.22-12 Region II BCC and PIF Species and Habitat Association Summary

Vegetation Community	Species with High Potential to Nest	Species with High Potential to Forage	Species with High Potential to Winter	Species with Moderate Potential to Nest	Species with Moderate Potential to Forage	Species with Moderate Potential to Winter	Species with Low Potential to Nest	Species with Low Potential to Forage	Species with Low Potential to Winter	Total Region II BCC and PIF Species Per Habitat
Agricultural Land	3	5	2	1	4	1	2	7	4	16
Aspen Forest and Woodland	–	1	1	3	4	1	5	9	3	14
Cliff and Canyon	1	1	–	2	2	–	5	3	–	8
Conifer Forest	1	1	1	4	4	2	10	12	8	18
Deciduous Forest	–	1	1	1	2	1	4	7	3	11
Desert Shrubland	1	3	–	3	5	–	1	2	2	10
Grassland	5	5	2	2	5	3	1	4	3	14
Greasewood Flat	1	1	1	1	1	–	1	3	1	5
Herbaceous Wetland	–	1	–	1	3	1	2	3	1	7
Montane Grassland[1]	2	2	1	1	4	1	3	9	2	15
Montane Shrubland	–	2	–	7	11	4	8	14	4	27
Open Water	–	1	–	–	1	–	–	1	–	3
Pinyon-Juniper Woodland	1	3	2	7	8	3	5	6	3	17
Sagebrush Shrubland	3	5	1	4	5	–	3	5	4	15
Saltbush Shrubland	2	4	1	–	2	–	1	3	2	9
Woody Riparian and Wetlands	3	3	3	3	5	–	5	9	3	18

[1] Habitats are considered priority in Colorado or Utah SWAPs or PIF Plans.

Note: Species can nest, forage, and winter in multiple habitats: therefore, the columns cannot be summed due to duplication.

3.22.5.4 Region III

Migratory Bird Habitat

The Region III analysis area extends from the IPP in western Utah to a point northwest of Las Vegas in Clark County, Nevada. All vegetation communities except tundra occur in Region III but desert shrubland is the dominant community. A description of vegetation communities is presented in Section 3.5, Vegetation.

Region III provides a diverse array of migratory bird habitats that vary by existing vegetation communities, landform types, and quality of available resources. This analysis focuses on two specific types of priority habitats identified for migratory birds: vegetation communities identified as priority habitat in the applicable SWAPs for Nevada and Utah and areas designated as IBAs and BHCAs in the Region III analysis area. Details regarding BHCAs and associated species and Audubon IBAs are discussed below.

Region III priority habitats are determined from the SWAPs and PIF Bird Conservation Plans for Utah and Nevada (GBBO 2010; Sutter et al. 2005; Parrish et al. 2002; Wildlife Action Team 2012). Priority habitats within the Region III analysis area include aspen forest and woodland, cliff and canyon, desert shrubland, grassland, herbaceous wetland, montane shrubland, open water, sagebrush shrubland, saltbush shrubland, and woody riparian and wetlands (Sutter et al. 2005).

It is important to note that approximately 16 percent of the Region III analysis area is located within sagebrush shrubland habitat. Potential impacts to these areas are quantitatively assessed in, and are anticipated to be fully offset through, TransWest's Greater Sage-Grouse Habitat Equivalency Analysis, Mitigation, and Monitoring Plan that is being developed in coordination with the BLM and Western. It is anticipated that BCC and PIF and other migratory bird species that inhabit sagebrush shrubland communities will benefit from this mitigation.

BHCAs and Representative Priority Bird Species

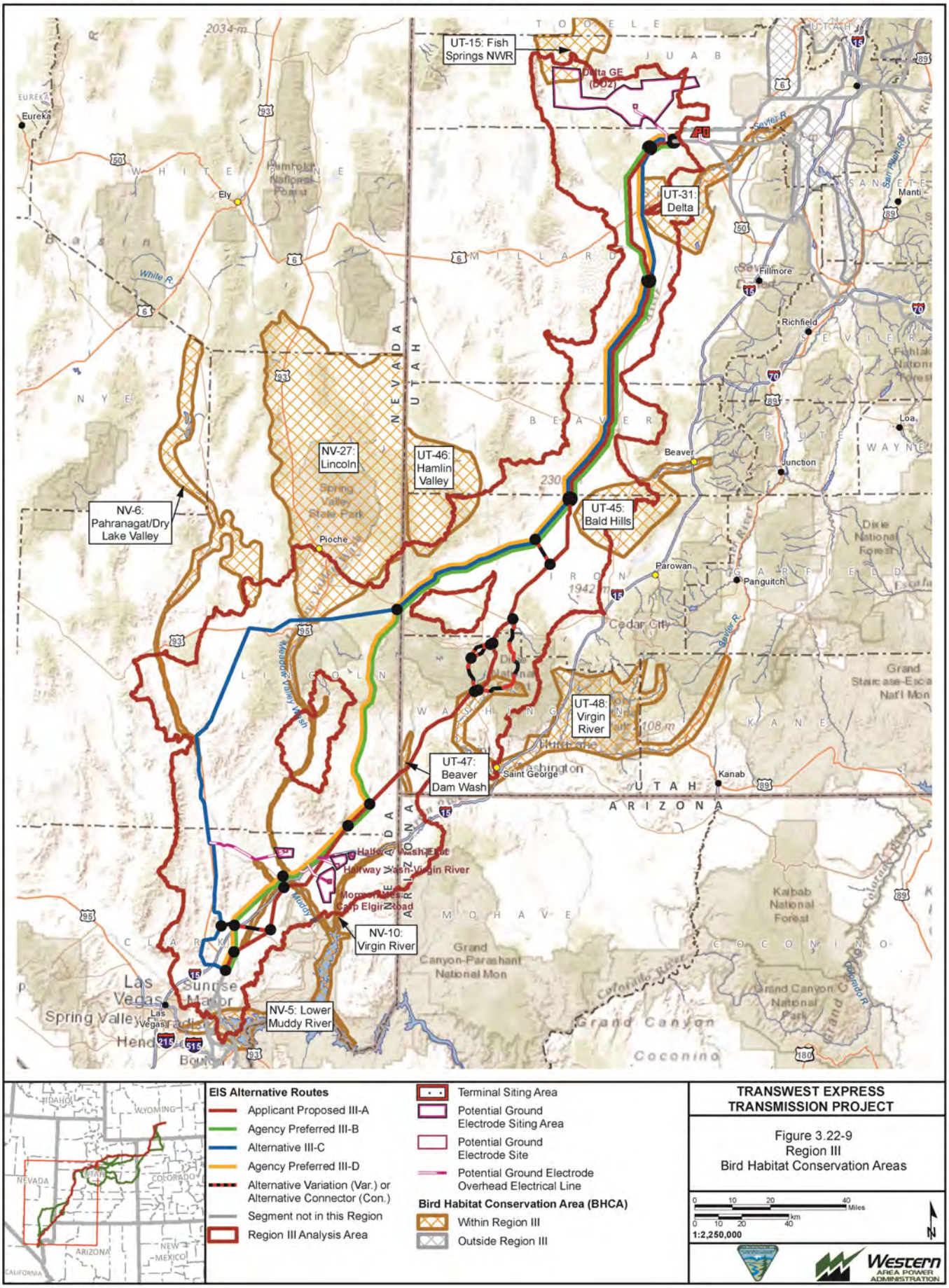
The Region III analysis area is within USFWS Bird Conservation Regions 9 (Great Basin), 16 (Southern Rockies/Colorado Plateau), and 33 (Sonoran and Mojave Deserts). **Table 3.22-13** and **Figure 3.22-9** present the six BHCAs that are partially within the Region III potential disturbance areas and several representative bird species for each (Neel 1999; Parrish et al. 2002; USFWS 2008; Utah Steering Committee IWJV 2005). A total of 10 BHCAs are located within the Region III analysis area comprising a total of 673,143 acres.

Audubon Important Bird Areas

A total of nine Audubon IBAs are within or in proximity to the Region III analysis area. **Figure 3.22-10** presents IBAs in the Region III analysis area.

Lytle Preserve IBA

The Lytle Preserve IBA is located less than 1 mile from the Region III potential disturbance area in Washington County, Utah. The IBA consists of 532 acres of cottonwood riparian habitat within the Utah portion of the Mojave Desert. Over 200 avian 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).


UT-15: Fish Springs NWR
Delta GE (DOE)
UT-31: Delta
NV-27: Lincoln
UT-46: Hamlin Valley
NV-6: Pahranagat/Dry Lake Valley
UT-45: Bald Hills
UT-48: Virgin River
UT-47: Beaver Dam Wash
NV-10: Virgin River
NV-5: Lower Muddy River
Halfway Wash-East
Halfway Wash-Virgin River
Mormon Mesa-Camp Elgin Road
Eureka
Ely
Pioche
Beaver
Fillmore
Richfield
Manti
Loa
Junction
Parowan
Panguitch
Cedar City
Saint George
Kanab
Las Vegas
Sunrise Manor
Spring Valley
Henderson
Boulder City
NEVADA
UTAH
ARIZONA
Grand Canyon-Parashant National Mon
Kaibab National Forest
Grand Canyon National Park
Grand Canyon
Coconino
Dixie National Forest
Grand Staircase-Escalante Nat'l Mon
Humboldt-Toiyabe National Forest
Spring Valley State Park
Meadow Valley Wash
Muddy R.
Virgin R.
Sevier R.
Colorado R.
White R.
Salt Wash R.
Colorado River
Grand Canyon National Park
Coconino
Kaibab National Forest

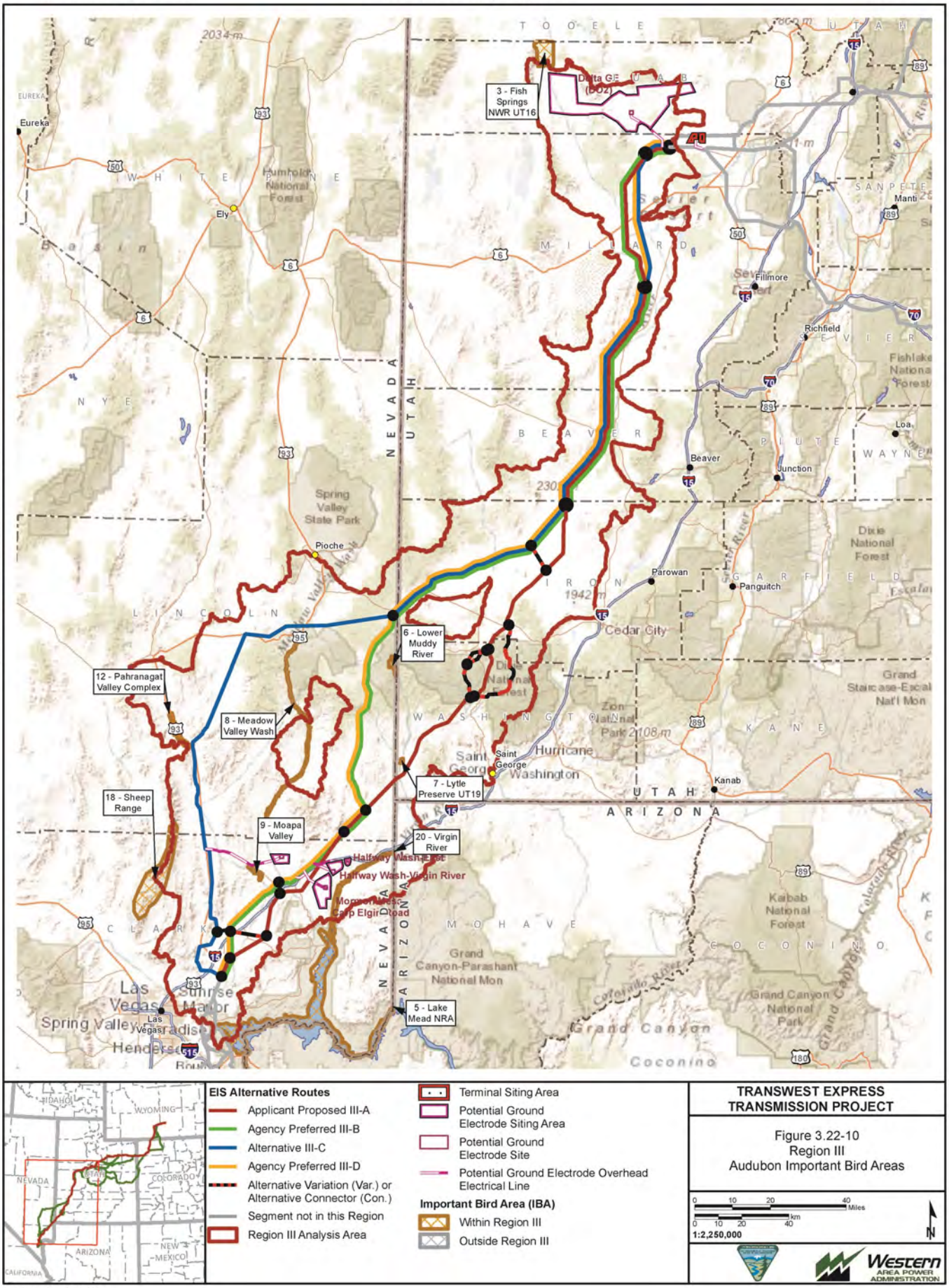

3 - Fish Springs NWR UT16
6 - Lower Muddy River
12 - Pahranagat Valley Complex
8 - Meadow Valley Wash
18 - Sheep Range
9 - Moapa Valley
7 - Lytle Preserve UT19
20 - Virgin River
5 - Lake Mead NRA
Eureka
Ely
Pioche
Las Vegas
Sunrise Manor
Spring Valley
Henderson
Saint George
Hurricane
Cedar City
Parowan
Panguitch
Beaver
Junction
Richfield
Fillmore
Manti
Loa
Kanab
Spring Valley State Park
Humboldt National Forest
Dixie National Forest
Fishlake National Forest
Kaibab National Forest
Grand Canyon-Parashant National Mon
Grand Canyon National Park
Grand Staircase-Escalante Nat'l Mon
Zion National Park
Colorado River
Grand Canyon
Coconino
NEVADA
UTAH
ARIZONA
EIS Alternative Routes
Applicant Proposed III-A
Agency Preferred III-B
Alternative III-C
Agency Preferred III-D
Alternative Variation (Var.) or Alternative Connector (Con.)
Segment not in this Region
Region III Analysis Area
Terminal Siting Area
Potential Ground Electrode Siting Area
Potential Ground Electrode Site
Potential Ground Electrode Overhead Electrical Line
Important Bird Area (IBA)
Within Region III
Outside Region III
TRANSWEST EXPRESS TRANSMISSION PROJECT
Figure 3.22-10
Region III
Audubon Important Bird Areas
1:2,250,000
Western AREA POWER ADMINISTRATION
Exported On: 2/10/2015

Table 3.22-13 Region III BHCAs and Representative Priority Bird Species

State	BCR	BHCA Number and Name	Primary Habitats	Representative Priority Bird Species[1,2]
Utah	9	31 – Delta	Open water Herbaceous wetland	Cinnamon teal Long-billed curlew[3] American avocet[3] Black-necked stilt[3]
Utah	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] Western yellow-billed cuckoo [3]
Utah	33	47 – Beaver Dam Wash	Open water Woody riparian and wetlands	Black-tailed gnatcatcher[3] Western yellow-billed cuckoo [3] Lucy's warbler[3] Bell's vireo[3]
Nevada	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
Nevada	9	6 – Pahranagat/Dry Lake Valley	Cottonwood-willow riparian Upland habitat	Southwestern willow flycatcher Yellow-billed cuckoo Sandhill crane Bald eagle Golden eagle
Nevada	9	27 – Lincoln Sage-grouse Population Management Unit	Sagebrush	Greater sage-grouse

1 **Table 3.22-3** presents a comprehensive list of BCC and PIF species potentially inhabiting the analysis area, their nesting, foraging, and winter habitat associations, and potential for occurrence within Project regions.

2 Many BCC and PIF species also are special status species and are presented in further detail in Section 3.8, Special Status Wildlife Species.

3 PIF Priority Bird Species may differ between states depending on abundance and threats to the species.

Moapa Valley IBA

The Moapa Valley IBA is located approximately 3 miles from the Region III potential disturbance area in Clark County, Nevada. The IBA consists of 2,442 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 bird species, 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 approximately 6 miles from the Region III potential disturbance area in Clark County, Nevada. The IBA consists of 15,685 acres encompassing considerable meanders of the Virgin River. The site is characterized by a variety of native riparian vegetation including marshes and areas 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 approximately 33 miles from the Region III potential disturbance area in Juab County, Utah. The IBA consists of 18,334 acres encompassing salt grass uplands, desert shrubland, 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 approximately 4 miles from the Region III potential disturbance area in Clark County, Nevada. The IBA consists of 2,683 acres, including the river and its floodplain from the Overton WMA to Lake Mead. The cottonwood riparian vegetation along this Colorado River tributary provides important habitat for a variety of avian 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 2012b).

Meadow Valley Wash IBA

The Meadow Valley Wash IBA is located approximately 3 miles from the Region III potential disturbance area in Lincoln County, Nevada. The IBA consists of 15,287 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 avian habitat and migration corridor for riparian and desert species. The IBA provides habitat for year-round residents, breeding birds, and migrants (National Audubon Society 2011).

Pahranagat Valley Complex IBA

The Pahranagat Valley Complex IBA is partially within the Region III potential disturbance area in Lincoln County, Nevada. The IBA consists of 6,012 acres from the Pahranagat Valley National Wildlife Refuge and the Key-Pittman WMA. More than 230 different avian species utilize the Pahranagat National Wildlife Refuge. Bird abundance and diversity is greatest during migration when large numbers of passerines, waterfowl, shorebirds, and raptors converge at the IBA. Willow thickets on the west side of Nesbitt Lake provide nesting habitat for the southwestern willow flycatcher and western yellow billed cuckoo. Sandhill cranes also utilize the IBA during migration (National Audubon Society 2011)

Sheep Range IBA

The Sheep Range IBA is located approximately 6 miles from the Region III potential disturbance area in Clark County, Nevada. The IBA consists of 60,943 acres in the arid mountains of southern Nevada. This area encompasses three different ecological life zones and provides habitat diversity for many bird species. Small seeps and springs provide much needed water for birds. The site is noted 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 NRA IBA is partially within the Region III and IV potential disturbance area in Clark County, Nevada. The 155,265 acre IBA is part of the Lake Mead NRA. The portion 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. The NPS manages the

Lake Mead NRA. The NPS is responsible for management of wildlife species on NPS-managed lands (NPS 2006). A variety of habitats occur at the Lake Mead NRA IBA. The primary vegetation community 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 NRA provide riparian habitat that supports diverse plant and wildlife species. Nearly 370 species of birds have been recorded in the NRA. This area encompasses migration stopover habitat for waterbirds. The adjacent cliff habitat provides important nesting sites for raptors, particularly peregrine falcons. Other notable species include bald eagle, southwestern willow flycatcher, Lucy's warbler, Bell's vireo, and yellow-breasted chat (National Audubon Society 2011).

Migratory Bird Species

A variety of migratory bird species inhabits the Region III analysis area. The range of species diversity reported for the seven counties traversed by Region III alternatives is 232 to 410 migratory bird species (eBird 2014). Species that are designated as special status are presented in Section 3.8, Special Status Wildlife Species. **Figure 3.22-8** presents estimated breeding seasons for avian species groups and BCC and PIF species within those groups for Region III. **Table 3.22-14** presents raptor species with potential to occur in the Region III analysis area (eBird 2014). Common ravens are not considered raptors but ravens may utilize historic raptor nests and, conversely, raptors may add to and/or utilize historic raven nests in order to make them suitable for nesting. Special status raptor species that occur in Region III are addressed in Section 3.8.5.8, Region III. **Figure 3.22-8** presents estimated breeding seasons for avian species groups and BCC and PIF species within those groups for Region III.

Table 3.22-14 Region III Raptor Species Potentially Occurring in the Migratory Bird Analysis Area and their Habitat Associations

Common Name[1] (*Scientific name*)	BCC or PIF	Region III Breeding, Foraging, and Winter Habitat Associations[2,3]
Osprey[4] (*Pandion haliaetus*)		Open water, woody riparian and wetlands
White-tailed kite[5] (*Elanus leucurus*)		Agricultural land, grassland, herbaceous wetland, woody riparian and wetlands
Mississippi Kite[5] (*Ictinia mississippiensis*)		Agricultural land, desert shrubland, grassland, woody riparian and wetlands
Bald Eagle[4] (*Haliaeetus leucocephalus*)	BCC; PIF	Open water, woody riparian and wetlands
Northern Harrier[4] (*Circus cyaneus*)		Agricultural land, grassland, herbaceous wetland, montane grassland, woody riparian and wetlands
Sharp-shinned Hawk (*Accipiter striatus*)		Agricultural land, aspen forest and woodland, conifer forest, deciduous forest, woody riparian and wetlands
Cooper's Hawk (*Accipiter cooperii*)		Agricultural land, aspen forest and woodland, conifer forest, deciduous forest, woody riparian and wetlands
Northern Goshawk (*Accipiter gentilis*)		Aspen forest and woodland, conifer forest
Common Black-hawk (*Buteogallus anthracinus*)		Woody riparian and wetlands
Harris's Hawk (*Parabuteo unicinctus*)		Desert shrubland, grassland, woody riparian and wetlands
Red-shouldered Hawk (*Buteo lineatus*)		Aspen forest and woodland, conifer forest, deciduous forest, woody riparian and wetlands
Broad-winged Hawk (*Buteo platypterus*)		Aspen forest and woodland, conifer forest, deciduous forest, woody riparian and wetlands

Table 3.22-14 Region III Raptor Species Potentially Occurring in the Migratory Bird Analysis Area and their Habitat Associations

Common Name[1] (*Scientific name*)	BCC or PIF	Region III Breeding, Foraging, and Winter Habitat Associations[2,3]
Swainson's Hawk[4] (*Buteo swainsoni*)	BCC	Agricultural land, desert shrubland, grassland, montane grassland, montane shrubland, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland
Zone-tailed Hawk[5] (*Buteo albonotatus*)		Cliff and canyon, conifer forest, desert shrubland, montane shrubland, woody riparian and wetlands
Red-tailed Hawk (*Buteo jamaicensis*)		Agricultural land, barren/sparsely vegetated, cliff and canyon, desert shrubland, grassland, greasewood flat, herbaceous wetland, montane grassland, montane shrubland, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, woody riparian and wetlands
Ferruginous Hawk[4] (*Buteo regalis*)	BCC	Agricultural land, desert shrubland, grassland, montane grassland, montane shrubland, sagebrush shrubland, saltbush shrubland
Rough-legged Hawk (*Buteo lagopus*)	PIF	Agricultural land, grassland, montane grassland
Golden Eagle[4] (*Aquila chrysaetos*)	BCC	Agricultural land, cliff and canyon, desert shrubland, ephemeral wash, grassland, montane grassland, montane shrubland, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland
Crested Caracara[5] (*Caracara cheriway*)		Agricultural land, desert shrubland, ephemeral wash, grassland
American Kestrel[4] (*Falco sparverius*)		Agricultural land, desert shrubland, grassland, greasewood flat, herbaceous wetland, montane grassland, montane shrubland, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, woody riparian and wetlands
Merlin[4] (*Falco* columbarius)		Agricultural land, aspen forest and woodlands, conifer forest, deciduous forest, grassland, montane grassland, woody riparian and wetlands
Peregrine Falcon[4] (*Falco peregrinus*)	BCC; PIF	Cliff and canyon, desert shrubland, grassland, herbaceous wetland, montane grassland, montane shrubland, pinyon-juniper woodland, saltbush shrubland, woody riparian and wetlands
Prairie Falcon[2] (*Falco mexicanus*)	BCC	Cliff and canyon, desert shrubland, grassland, montane grassland, montane shrubland, sagebrush shrubland, saltbush shrubland
Barn Owl[5] (*Tyto alba*)		Agricultural land, cliff and canyon, desert shrubland, grassland, herbaceous wetland, montane grassland
Flammulated Owl (*Otus flammeolus*)	BCC; PIF	Aspen forest and woodland, conifer forest
Western Screech-owl[4] (*Megascops kennicottii*)		Aspen forest and woodland, deciduous forest, woody riparian and wetlands
Great Horned Owl (*Bubo virginianus*)		Agricultural land, aspen forest and woodland, conifer forest, deciduous forest, desert shrubland, grassland, greasewood flat, herbaceous wetland, montane grassland, montane shrubland, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, woody riparian and wetlands
Northern Pygmy Owl[4] (*Glaucidium californicum*)		Aspen forest and woodlands, conifer forest, deciduous forest, woody riparian and wetlands
Burrowing Owl[4] (*Athene cunicularia*)	BCC	Agricultural land, desert shrubland, grassland, montane grassland, sagebrush shrubland, saltbush shrubland
Long-eared Owl[4] (*Asio otus*)		Agricultural land, aspen forest and woodland, deciduous forest, grassland, montane grassland, pinyon-juniper woodland, woody riparian and wetlands
Short-eared Owl[4] (*Asio flammeus*)	PIF	Agricultural land, grassland, herbaceous wetland, montane grassland

Table 3.22-14 Region III Raptor Species Potentially Occurring in the Migratory Bird Analysis Area and their Habitat Associations

Common Name[1] (*Scientific name*)	BCC or PIF	Region III Breeding, Foraging, and Winter Habitat Associations[2,3]
Northern Saw-whet Owl[4] (*Aegolius acadicus*)		Aspen forest and woodland, conifer forest, deciduous forest, woody riparian and wetlands
Common Raven[4] (*Corvus corax*)		Agricultural land, aspen forest and woodland, barren/sparsely vegetated, cliff and canyon, conifer forest, deciduous forest, desert shrubland, grassland, greasewood flat, herbaceous wetland, montane grassland, montane shrubland, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, tundra, woody riparian and wetlands

[1] Raptor species likely to occur in suitable habitat within the Region III analysis area.

[2] Habitat Association refers to vegetation communities, as presented in **Table 3.22-1**.

[3] The following habitats are considered priority in the Utah or Nevada SWAPs or PIF Bird Conservation Plans: aspen forest and woodland, cliff and canyon, desert shrubland, grassland, herbaceous wetland, montane grassland, montane shrubland, open water, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, and woody riparian and wetlands.

[4] The species is designated as climate endangered in the 2014 Audubon Birds and Climate Change Report.

[5] The species is designated as climate threatened in the 2014 Audubon Birds and Climate Change Report.

BCC and PIF Species

A total of 63 BCC and PIF species have potential to inhabit one or more of the vegetation communities defined for Region III. **Tables 3.22-15** and **3.22-16** present these species and their potential for occurrence in suitable nesting, foraging, and winter habitat in Region III. All vegetation communities except tundra occur in the Region III analysis area. The following communities are considered priority habitat types in Region III, as identified in the Utah and Nevada SWAPs and PIF bird conservation plans: aspen forest and woodland, cliff and canyon, desert shrubland, grassland, herbaceous wetland, montane grassland, montane shrubland, open water, sagebrush shrubland, saltbush shrubland, and woody riparian and wetlands.

Sources for Region III occurrence potential information include:

- Utah Natural Heritage Program;
- Nevada Natural Heritage Program;
- Utah Comprehensive Wildlife Conservation Strategy (Sutter et al. 2005);
- Nevada Wildlife Action Plan (Wildlife Action Plan Team 2012);
- Birds of North America Online (specific authors and dates for each species account);
- NatureServe Explorer 2014; and
- Professional knowledge provided by agency biologists.

Table 3.22-15 Region III BCC and PIF Species Habitat Associations and Potential for Occurrence

Species State Status	Agricultural Land	Aspen Forest and Woodland[1]	Cliff and Canyon[1]	Conifer Forest	Deciduous Forest	Desert Shrubland[1]	Ephemeral Wash	Grassland[1]	Greasewood Flat	Herbaceous Wetland[1]	Montane Grassland[1]	Montane Shrubland[1]	Open Water[1]	Pinyon-juniper Woodland[2]	Sagebrush Shrubland[1]	Saltbush Shrubland[1]	Woody Riparian and Wetlands[1]
Eared Grebe[2]										Moderate N, F			Moderate F				
Least Bittern[2] NV – SCP										Low N, F							
Bald Eagle[2] UT SGCN, Tier I; NV–E													High F				High N, W
Swainson's Hawk[2]	High N, F					High F		High N, F			High N, F	High F		High F	High F	High F	
Ferruginous Hawk[2] NV – SCP; UT SGCN, Tier II	High F, W		High N, F			High F		High N, F, W			High N, F, W	High F			High F	High F	
Rough–legged Hawk	Low F, W							Low F, W			Low F, W						
Golden Eagle[2] NV – SCP	High F, W		High N, F			High F, W		High N, F, W			High N, F, W	High F, W		High N, F, W	High F, W	High F, W	
Peregrine Falcon[3] NV–E; UT SGCN, Tier III			Moderate N, F			Moderate F		Moderate F		Moderate F	Moderate F	Moderate F		Moderate F		Moderate F	Moderate F
Prairie Falcon[2] NV – SCP			Moderate N, F			Moderate F		Moderate F, W			Moderate F, W	Moderate F			Moderate F	Moderate F	
Dusky Grouse[3] NV – SCP		Low N, F, W		Low N, F, W	Low N, F, W							Low N, F					
Gambel's Quail UT SGCN, Tier III	High F, W					High N, F, W	High F, W	High F, W	High F, W								
Long–billed Curlew[2] NV – SCP; UT SGCN, Tier II	Moderate F							Moderate N, F		Moderate F			Low F				Moderate F
Flammulated Owl NV – SCP		Moderate N, F		Moderate N, F													

Table 3.22-15 Region III BCC and PIF Species Habitat Associations and Potential for Occurrence

Species State Status	Agricultural Land	Aspen Forest and Woodland[1]	Cliff and Canyon[1]	Conifer Forest	Deciduous Forest	Desert Shrubland[1]	Ephemeral Wash	Grassland[1]	Greasewood Flat	Herbaceous Wetland[1]	Montane Grassland[1]	Montane Shrubland[1]	Open Water[1]	Pinyon-juniper Woodland[2]	Sagebrush Shrubland[1]	Saltbush Shrubland[1]	Woody Riparian and Wetlands[1]
Short–eared Owl[2] NV – SCP; UT SGCN, Tier II	Low F, W							Low N, F, W		Low F, W	Low F						
Burrowing Owl[2] NV – SCP; UT SGCN, Tier II	High N, F					High N, F		High N, F			Low N, F				High N, F	High N, F	
White–throated Swift[3]		Low F	Low N	Low F	Low F							Low F					
Costa's Hummingbird						Low N, F, W	Low F, W										
Calliope Hummingbird[3]				Low N, F	Low F						Low F	Low F					Low F
Lewis's Woodpecker[3] NV – SCP; UT SGCN, Tier II		Low F, W		Low N, F, W	Low F, W									Low F, W			Low N, F, W
Williamson's Sapsucker[2] UT SGCN,– Tier III		Moderate F		Moderate N, F	Moderate F												
Red–naped Sapsucker[2]		Low N, F, W		Low N, F, W	Low N, F, W												Low N, F, W
Olive–sided Flycatcher NV – SCP				Low N, F													
Willow Flycatcher[3] NV – SCP																	Low N, F
Gray Flycatcher[3]												Moderate F		Moderate N, F	Moderate N, F		
Dusky Flycatcher[3]												Low N, F		Low N, F	Low N, F		Low N, F
Loggerhead Shrike NV – SCP	High N, F, W							High N, F, W	High N, F, W			Low N, F, W		High N, F, W	High N, F, W	High N, F, W	High N, F, W

Table 3.22-15 Region III BCC and PIF Species Habitat Associations and Potential for Occurrence

Species State Status	Agricultural Land	Aspen Forest and Woodland[1]	Cliff and Canyon[1]	Conifer Forest	Deciduous Forest	Desert Shrubland[1]	Ephemeral Wash	Grassland[1]	Greasewood Flat	Herbaceous Wetland[1]	Montane Grassland[1]	Montane Shrubland[1]	Open Water[1]	Pinyon-juniper Woodland[2]	Sagebrush Shrubland[1]	Saltbush Shrubland[1]	Woody Riparian and Wetlands[1]
Bell's Vireo[3] NV – SCP; UT SGCN, Tier III																	Low N, F
Gray Vireo[3] UT SGCN, Tier III						Moderate F	Moderate N, F					Moderate N, F		Moderate N, F			
Steller's Jay		Moderate N, F, W		Moderate N, F, W	Moderate N, F, W							Moderate N, F, W					
Western Scrub–jay												Moderate N, F, W		Moderate N, F, W			
Pinyon Jay[3] NV – SCP				Moderate N, F, W								Moderate N, F, W		Moderate N, F, W			
Clark's Nutcracker[2]				Low N, F, W										Low N, F, W			
Juniper Titmouse[3]														Moderate N, F, W			
Verdin						Moderate N, F, W	Moderate F, W										
Cactus Wren						High N, F, W	High F, W										
Black–tailed Gnatcatcher						Moderate N, F, W	Moderate F, W										
Mountain Bluebird[3]	Moderate N, F	Moderate N, F									Moderate N, F	Moderate N, F		Moderate N, F			
Sage Thrasher[3] NV – SCP; UT SGCN, Tier III															Low N, F, W		

Table 3.22-15 Region III BCC and PIF Species Habitat Associations and Potential for Occurrence

Species State Status	Agricultural Land	Aspen Forest and Woodland[1]	Cliff and Canyon[1]	Conifer Forest	Deciduous Forest	Desert Shrubland[1]	Ephemeral Wash	Grassland[1]	Greasewood Flat	Herbaceous Wetland[1]	Montane Grassland[1]	Montane Shrubland[1]	Open Water[1]	Pinyon-juniper Woodland[2]	Sagebrush Shrubland[1]	Saltbush Shrubland[1]	Woody Riparian and Wetlands[1]
Bendire's Thrasher[3.] NV – SCP; UT SGCN, Tier III	Low N, F					Low N, F	Low N, F	Low N, F						Low N, F	Low N, F		
Crissal Thrasher UT SGCN, Tier III						Moderate N, F, W	Moderate F, W								Moderate N, F, W	Moderate N, F, W	Moderate N, F, W
Le Conte's Thrasher[3] NV – SCP						Moderate N, F, W	Moderate F, W										Moderate N, F, W
Bohemian Waxwing[2]		Low F		Low F	Low F												
Phainopepla						High N, F, W	High F, W										High N, F, W
Virginia's Warbler[3] NV – SCP; UT SGCN, Tier III												Moderate N, F		Moderate N, F			
Lucy's Warbler UT SGCN, Tier III																	Moderate N, F
Yellow Warbler		Moderate N, F															Moderate N, F
Black–throated Gray Warbler[3] UT SGCN – Tier III														Moderate N, F			
Grace's Warbler				Low N, F								Low N, F					
Green–tailed Towhee[2]												Moderate N, F			Moderate N, F		Moderate N, F

Table 3.22-15 Region III BCC and PIF Species Habitat Associations and Potential for Occurrence

Species State Status	Agricultural Land	Aspen Forest and Woodland[1]	Cliff and Canyon[1]	Conifer Forest	Deciduous Forest	Desert Shrubland[1]	Ephemeral Wash	Grassland[1]	Greasewood Flat	Herbaceous Wetland[1]	Montane Grassland[1]	Montane Shrubland[1]	Open Water[1]	Pinyon-juniper Woodland[2]	Sagebrush Shrubland[1]	Saltbush Shrubland[1]	Woody Riparian and Wetlands[1]
Abert's Towhee UT SGCN, Tier III	Moderate N, F, W					Moderate N, F, W	Moderate N, F, W										Moderate N, F, W
American Tree Sparrow	Moderate F							Moderate F, W				Moderate F, W					
Brewer's Sparrow[3] NV – SCP; UT SGCN, Tier III									Low N, F						Moderate N, F	Low N, F	
Black–chinned Sparrow[3] NV – SCP						Low N, F	Low N, F							Low N, F			
Black–throated Sparrow						High N, F	High N, F		High N, F						High N, F		
Sage Sparrow[2] NV – SCP; UT SGCN, Tier III															Moderate N, F		
Fox Sparrow												Low N, F					Low N, F
Lincoln's Sparrow		Low N, F										Low N, F					Low N, F
Indigo Bunting	Low N, F				Low N, F							Low N, F					
Yellow–headed Blackbird[2]	Moderate F									Moderate N, F							Moderate F
Scott's Oriole NV – SCP						Moderate N, F	Moderate N, F							Moderate N, F			
Black Rosy–finch[2] NV – SCP; UT SGCN, Tier III	Low F		Low N, F								Low F	Low F					

Table 3.22-15 Region III BCC and PIF Species Habitat Associations and Potential for Occurrence

Species State Status	Agricultural Land	Aspen Forest and Woodland[1]	Cliff and Canyon[1]	Conifer Forest	Deciduous Forest	Desert Shrubland[1]	Ephemeral Wash	Grassland[1]	Greasewood Flat	Herbaceous Wetland[1]	Montane Grassland[1]	Montane Shrubland[1]	Open Water[1]	Pinyon-juniper Woodland[2]	Sagebrush Shrubland[1]	Saltbush Shrubland[1]	Woody Riparian and Wetlands[1]
Cassin's Finch[3] NV – SCP				Low N, F										Low F			
White–winged Crossbill[3]				Low N, F, W													
Total BCC and PIF Species Per Habitat	**16**	**11**	**6**	**15**	**9**	**20**	**14**	**13**	**4**	**6**	**11**	**24**	**3**	**19**	**15**	**9**	**20**

[1] Habitat types are considered priority in either Utah or Nevada SWAPs or PIF Bird Conservation Plans.

[2] The species is designated as climate endangered in the 2014 Audubon Birds and Climate Change Report.

[3] The species is designated as climate threatened in the 2014 Audubon Birds and Climate Change Report.

Note: N = nesting habitat; F = foraging habitat; W = winter habitat.

Table 3.22-16 Region III BCC and PIF Species and Habitat Association Summary

Vegetation Community	Species with High Potential to Nest	Species with High Potential to Forage	Species with High Potential to Winter	Species with Moderate Potential to Nest	Species with Moderate Potential to Forage	Species with Moderate Potential to Winter	Species with Low Potential to Nest	Species with Low Potential to Forage	Species with Low Potential to Winter	Total Region III BCC and PIF Species Per Habitat
Agricultural Land	3	6	4	2	5	1	2	5	2	16
Aspen Forest and Woodland[1]	–	–	–	4	5	1	3	6	3	11
Cliff and Canyon[1]	2	2	–	2	2	–	2	1	–	6
Conifer Forest	–	–	–	4	4	2	9	11	5	15
Deciduous Forest	–	–	–	1	2	1	3	7	3	9
Desert Shrubland[1]	5	8	4	6	9	5	3	3	1	20
Ephemeral Wash	1	4	3	3	7	5	2	3	1	14
Grassland[1]	5	6	4	1	4	2	2	3	2	13
Greasewood Flat	2	3	2	–	–	–	1	1	–	4
Herbaceous Wetland[1]	–	–	–	2	4	–	1	2	1	6
Montane Grassland	3	3	2	1	3	1	1	5	1	11
Montane Shrubland[1]	–	3	1	6	10	4	7	10	1	24
Open Water[1]	–	1	–	0	–	–	–	1	–	3
Pinyon-Juniper Woodland	2	3	2	9	10	3	4	6	2	19
Sagebrush Shrubland[1]	3	6	2	5	6	1	3	3	1	15
Saltbush Shrubland[1]	2	5	2	1	3	1	1	1	–	9
Woody Riparian and Wetlands[1]	3	2	3	6	9	3	7	8	2	20

[1] Habitats are considered priority in Nevada or Utah SWAPs or PIF Plans.

Note: Species can nest, forage, and winter in multiple habitats; therefore, the columns cannot be summed due to duplication.

3.22.5.5 Region IV

Migratory Bird Habitat

The Region IV analysis area extends from northwest of Las Vegas, Nevada to Marketplace, Nevada. There is less vegetation diversity in Region IV than in other Project regions. The dominant vegetation community is desert shrubland. The remaining vegetation communities include: barren/sparsely vegetated, cliff and canyon, desert shrubland, ephemeral wash, grassland, herbaceous wetland, open water, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, and woody riparian and wetlands. A description of these communities is presented in Section 3.5, Vegetation.

This analysis focuses on two specific types of priority habitats identified for migratory birds; vegetation communities identified as priority habitat in the Nevada SWAP and PIF bird conservation plan and areas designated as IBAs and BHCAs in the Region IV analysis area. The following communities are within the Region IV analysis area and are considered priority habitats in Region IV, as identified in the Nevada SWAP and PIF bird conservation plan: cliff and canyon, desert shrubland, herbaceous wetland, montane shrubland, open water, sagebrush shrubland, and woody riparian and wetlands. Details regarding BHCAs and associated species and Audubon IBAs are discussed below.

It is important to note that approximately <1.0 percent of the Region IV analysis area is located within sagebrush shrubland habitat. Potential impacts to these areas are quantitatively assessed in, and are anticipated to be fully offset through, TransWest's Greater Sage-Grouse Habitat Equivalency Analysis, Mitigation, and Monitoring Plan that is being developed in coordination with the BLM and Western. It is anticipated that BCC and PIF and other migratory bird species that inhabit sagebrush shrubland communities will benefit from this mitigation.

BHCAs and Representative Priority Bird Species

The Region IV analysis area falls within USFWS Bird Conservation Region 33 (Sonoran and Mojave deserts). **Table 3.22-17** and **Figure 3.22-11** present the two BHCAs that are within the Region IV potential disturbance and several representative bird species for each (Neel 1999; Nevada Steering Committee IWJV 2005; USFWS 2008). Two BHCAs are within the Region IV analysis area comprising a total of 410,048 acres.

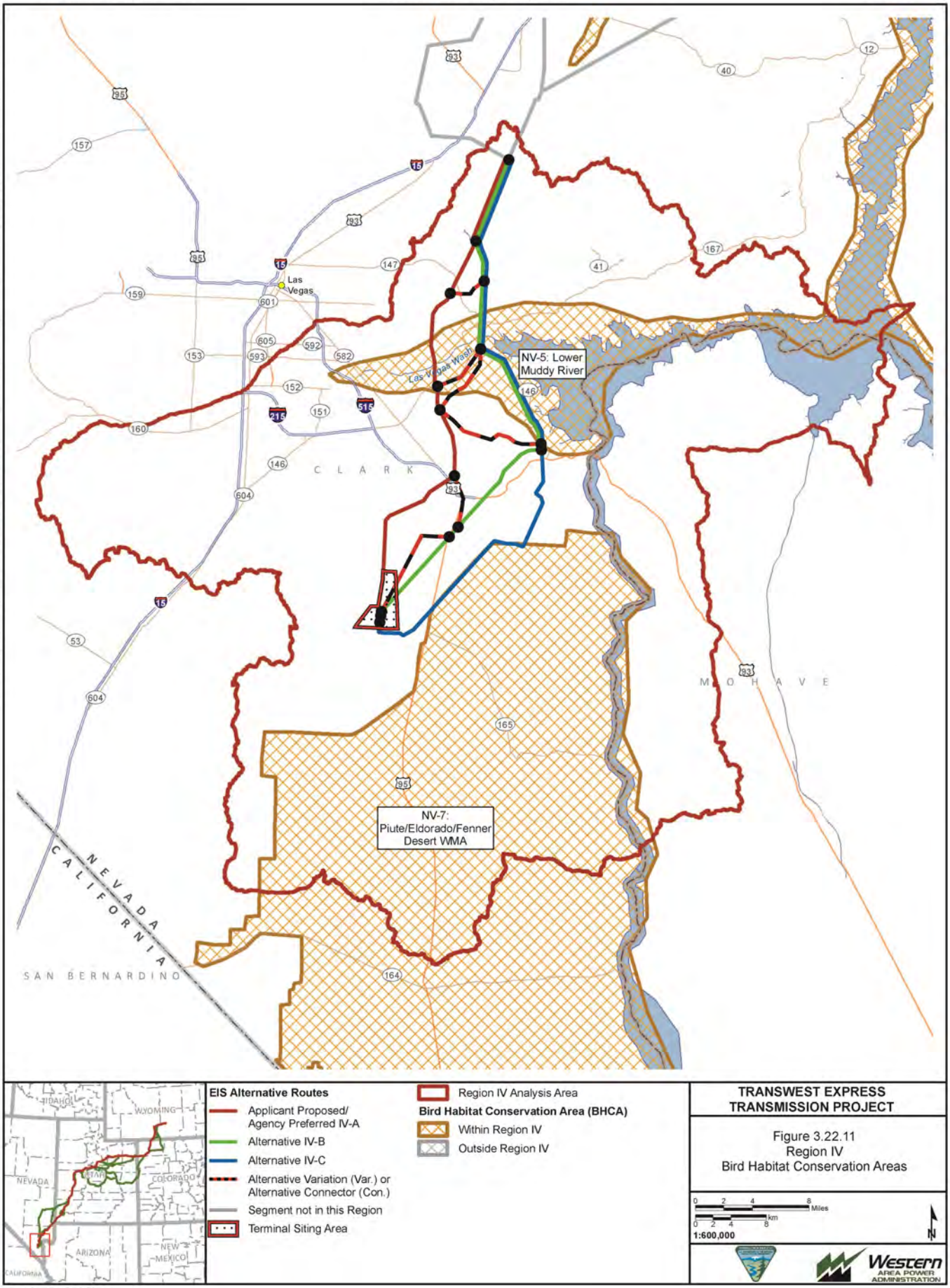
Table 3.22-17 Region IV BHCAs and Representative Priority Bird Species

State	BCR	BHCA Number and Name	Primary Habitats	Representative Priority Bird Species[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	Le Conte's thrasher[3] Burrowing owl[3] Ash-throated flycatcher[3] Phainopepla[3] Loggerhead shrike[3]

[1] **Table 3.22-3** presents a comprehensive list of BCC and PIF species potentially inhabiting the analysis area, their nesting, foraging, and winter habitat associations, and potential for occurrence within Project regions.

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

[3] PIF Priority Bird Species may differ between states depending on abundance and threats to the species.



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Audubon Important Bird Areas

Two Audubon IBAs are within the Region IV potential disturbance area. **Figure 3.22-12** presents the IBAs in the Region IV analysis area.

Lake Mead National Recreation Area IBA

The Lake Mead NRA IBA is partially within the Region III and IV potential disturbance areas in Clark County, Nevada. The 155,265 acre IBA is part of the Lake Mead NRA. The portion 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. The NPS manages the Lake Mead NRA. The NPS is responsible for management of wildlife species on NPS-managed lands (NPS 2006). A variety of habitats occurs at the Lake Mead NRA IBA. The primary vegetation community 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 NRA provide riparian habitat that supports diverse plant and wildlife species. Nearly 370 species of birds have been recorded in the NRA. This area encompasses migration stopover habitat for waterbirds. The adjacent cliff habitat provides important nesting sites for raptors, particularly peregrine falcons. Other notable species 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 approximately 16 miles from the Region IV potential disturbance area in Clark County, Nevada. The IBA consists of 31,343 acres containing dense stands of Joshua Tree Forest. Nest cavities are one habitat component that is almost exclusively absent from desert habitats 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, contain cavities that 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).

Migratory Bird Species

A variety of migratory bird species inhabits the Region IV analysis area. A total of 409 migratory bird species have been reported for Clark County (eBird 2014). Species that are designated as special status are presented in Section 3.8, Special Status Wildlife Species. **Figure 3.22-13** presents estimated breeding seasons for avian species groups and BCC and PIF species within those groups for Region IV.

Table 3.22-18 presents raptor species with potential to occur in the Region IV analysis area (eBird 2014). Common ravens are not considered raptors but ravens may utilize historic raptor nests and, conversely, raptors may add to and/or utilize historic raven nests in order to make them suitable for nesting. Special status raptor species that occur in Region IV are addressed in Section 3.8.5.9.

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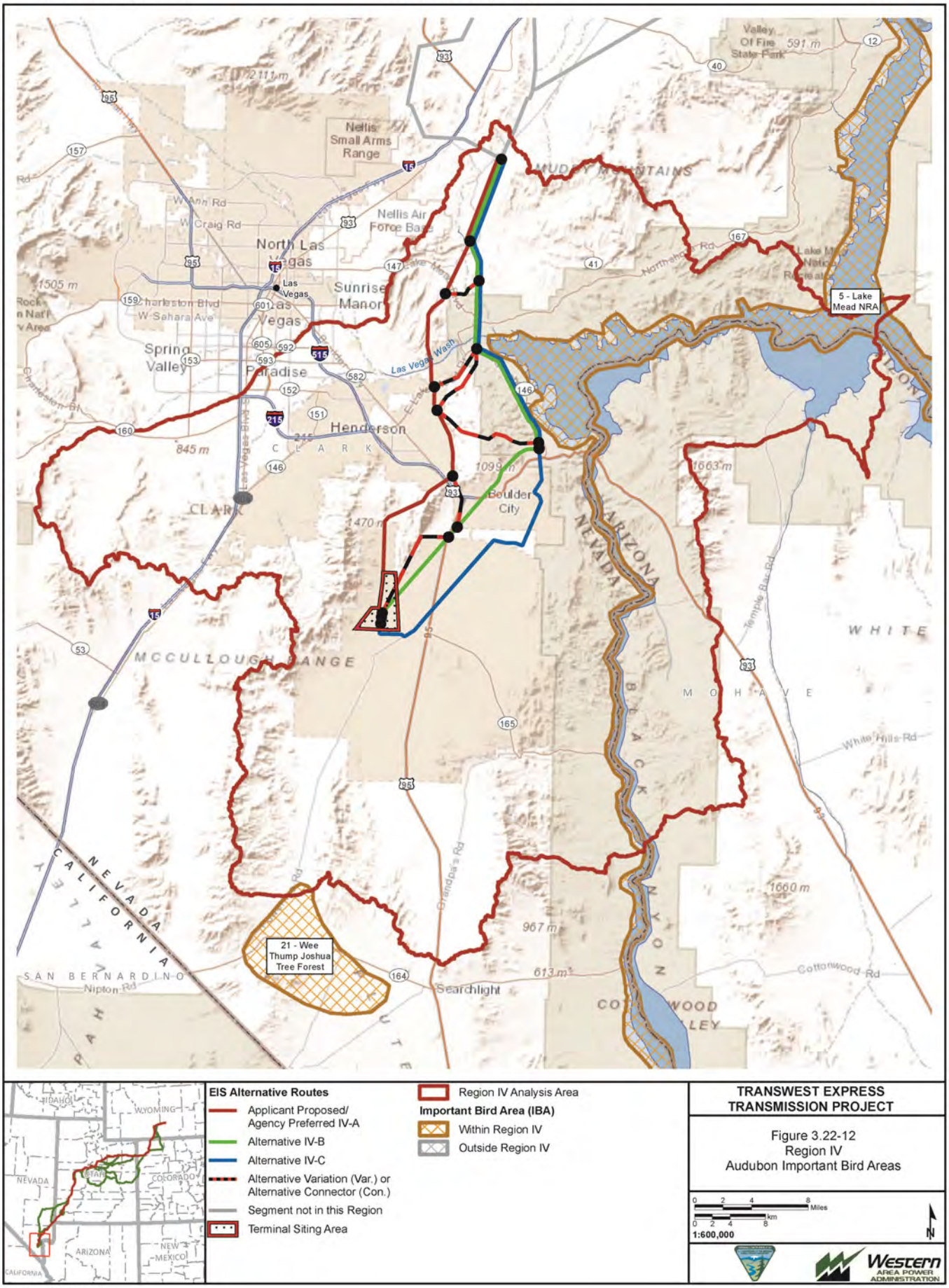

EIS Alternative Routes

- Applicant Proposed/ Agency Preferred IV-A
- Alternative IV-B
- Alternative IV-C
- Alternative Variation (Var.) or Alternative Connector (Con.)
- Segment not in this Region
- Terminal Siting Area
- Region IV Analysis Area

Important Bird Area (IBA)

- Within Region IV
- Outside Region IV

TRANSWEST EXPRESS TRANSMISSION PROJECT

Figure 3.22-12
Region IV
Audubon Important Bird Areas

0 2 4 8 Miles
0 2 4 8 km
1:600,000
N

Western AREA POWER ADMINISTRATION

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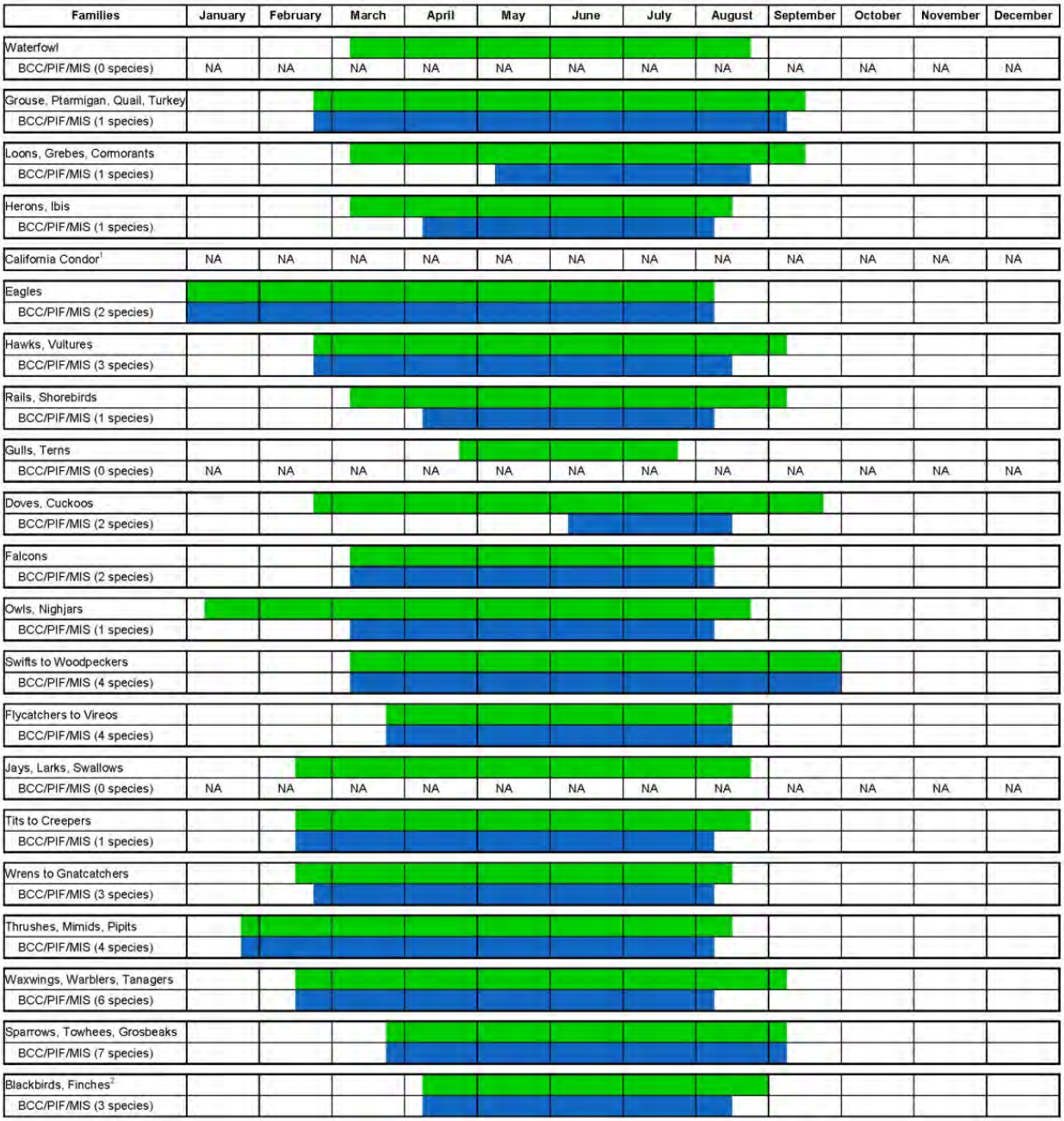

[1] Breeding season for the California Condor begins in mid-February and successful nesting takes 2 years.
[2] Excludes crossbills which may breed in any month.

Source: Baicich and Harrison 1997; Nelson and Leukering 2007.

Figure 3.22-13 Approximate Breeding Seasons for Avian Species in Region IV

Table 3.22-18 Region IV Raptor Species Potentially Occurring within the Migratory Bird Analysis Area and their Habitat Associations

Common Name (*Scientific name*)	BCC or PIF	Region IV Breeding, Foraging, and Winter Habitat Associations[1,2]
Osprey[3] (*Pandion haliaetus*)		Open water, woody riparian and wetlands
White-tailed kite[4] (*Elanus leucurus*)		Grassland, herbaceous wetland, woody riparian and wetlands
Mississippi Kite[4] (*Ictinia mississippiensis*)		Desert shrubland, ephemeral wash, grassland, woody riparian and wetlands
Bald Eagle[3] (*Haliaeetus leucocephalus*)	BCC; PIF	Open water, woody riparian and wetlands
Northern Harrier[3] (*Circus cyaneus*)		Grassland, herbaceous wetland, woody riparian and wetlands
Sharp-shinned Hawk (*Accipiter striatus*)		Woody riparian and wetlands
Cooper's Hawk (*Accipiter cooperii*)		Woody riparian and wetlands
Common Black-hawk (*Buteogallus anthracinus*)		Woody riparian and wetlands
Harris's Hawk (*Parabuteo unicinctus*)		Desert shrubland, ephemeral wash, grassland, woody riparian and wetlands
Red-shouldered Hawk (*Buteo lineatus*)		Woody riparian and wetlands
Swainson's Hawk[3] (*Buteo swainsoni*)	BCC	Desert shrubland, ephemeral wash, grassland, sagebrush shrubland, saltbush shrubland
Zone-tailed Hawk[4] (*Buteo albonotatus*)		Cliff and canyon, desert shrubland, ephemeral wash, woody riparian and wetlands
Red-tailed Hawk (*Buteo jamaicensis*)		Cliff and canyon, desert shrubland, ephemeral wash, grassland, herbaceous wetland, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, woody riparian and wetlands
Broad-winged Hawk[4] (*Buteo platypterus*)		Woody riparian and wetlands
Ferruginous Hawk[3] (*Buteo regalis*)	BCC	Desert shrubland, ephemeral wash, grassland, sagebrush shrubland, saltbush shrubland
Rough-legged Hawk (*Buteo lagopus*)	PIF	Grassland
Golden Eagle[3] (*Aquila chrysaetos*)	BCC	Cliff and canyon, desert shrubland, ephemeral wash, grassland, sagebrush shrubland, saltbush shrubland
American Kestrel[3] (*Falco sparverius*)		Desert shrubland, ephemeral wash, grassland, herbaceous wetland, sagebrush shrubland, saltbush shrubland, woody riparian and wetlands
Merlin[4] (*Falco columbarius*)		Grassland, woody riparian and wetlands
Peregrine Falcon[3] (*Falco peregrinus*)	BCC; PIF	Cliff and canyon, desert shrubland, grassland, herbaceous wetland, saltbush shrubland, woody riparian and wetlands
Prairie Falcon[3] (*Falco mexicanus*)	BCC	Cliff and canyon, desert shrubland, grassland, sagebrush shrubland, saltbush shrubland
Barn Owl[4] (Tyto alba)		Cliff and canyon, desert shrubland, grassland, herbaceous wetland

Table 3.22-18 Region IV Raptor Species Potentially Occurring within the Migratory Bird Analysis Area and their Habitat Associations

Common Name (*Scientific name*)	BCC or PIF	Region IV Breeding, Foraging, and Winter Habitat Associations[1,2]
Western Screech-owl[3] (*Megascops kennicottii*)		Woody riparian and wetlands
Great Horned Owl (*Bubo virginianus*)		Desert shrubland, grassland, herbaceous wetland, sagebrush shrubland, saltbush shrubland, woody riparian and wetlands
Elf Owl (*Micrathene whitneyi*)		Desert shrubland, ephemeral wash, woody riparian and woodland
Burrowing Owl[3] (*Athene cunicularia*)	BCC	Desert shrubland, grassland, sagebrush shrubland, saltbush shrubland
Long-eared Owl[3] (*Asio otus*)		Grassland, woody riparian and wetlands
Short-eared Owl[3] (*Asio flammeus*)	PIF	Grassland, herbaceous wetland
Common Raven[3] (*Corvus corax*)		Cliff and canyon, desert shrubland, grassland, herbaceous wetland, sagebrush shrubland, saltbush shrubland, woody riparian and wetlands

[1] Habitat Association refers to vegetation communities, as presented in **Table 3.22-1**.

[2] The following habitats are considered priority in the Nevada SWAP or PIF Bird Conservation Plan: cliff and canyon, desert shrubland, grassland, herbaceous wetland, open water, pinyon-juniper woodland, sagebrush shrubland, saltbush shrubland, and woody riparian and wetlands.

[3] The species is designated as climate endangered in the 2014 Audubon Birds and Climate Change Report.

[4] The species is designated as climate threatened in the 2014 Audubon Birds and Climate Change Report.

BCC and PIF Species

A total of 37 BCC and PIF species have potential to inhabit one or more of the vegetation communities defined for Region IV. **Tables 3.22-19** and **3.22-20** present these species and their potential for occurrence in suitable nesting, foraging, and winter habitat in Region IV. The Region IV analysis area also includes small amounts of grassland, pinyon-juniper, and sagebrush shrubland; however, none of these habitats are within the Region IV potential disturbance area. The following species could utilize these habitats, but have very little potential for occurrence in the Region IV potential disturbance area and are not carried forward for analysis in Region IV: rough-legged hawk, gray flycatcher, mountain bluebird, sage thrasher, Bohemian waxwing, Grace's warbler, American tree sparrow, sage sparrow, and indigo bunting. Sources for occurrence potential information for Region IV include:

- Nevada Natural Heritage Program;
- Nevada Wildlife Action Plan (Wildlife Action Plan Team 2012);
- Birds of North America Online (specific authors and dates for each species account);
- NatureServe Explorer 2014; and
- Professional knowledge provided by agency biologists.

Table 3.22-19 Region IV BCC and PIF Species Habitat Associations and Potential for Occurrence

Species (State Status)	Cliff and Canyon[1]	Desert Shrubland[1]	Ephemeral Wash	Herbaceous Wetland[1]	Open Water[1]	Saltbush Shrubland[1]	Woody Riparian and Wetlands[1]
Eared Grebe[2]				High N, F	High F		
Least Bittern[2] NV – SCP				Low N, F			
Bald Eagle[2] NV–E					Low F		Low N, W
Swainson's Hawk[2]		Low F				Low F	
Ferruginous Hawk[2] NV – SCP	Low N, F	Low F				Low F	
Golden Eagle[2] NV – SCP	Moderate N, F	Moderate F, W				Moderate F, W	
Peregrine Falcon[3] NV–E	Moderate N, F	Moderate F		Moderate F		Moderate F	Moderate F
Prairie Falcon[2] NV – SCP	Moderate N, F	Moderate F				Moderate F	
Gambel's Quail		High N, F, W	High F, W				
Long–billed Curlew[2] NV – SCP				Low F	Low F		Low F
Burrowing Owl[2] NV – SCP		High N, F				High N, F	
White–throated Wwift[3]	Moderate N						
Costa's Hummingbird		Moderate N, F, W	Moderate F, W				

Table 3.22-19 Region IV BCC and PIF Species Habitat Associations and Potential for Occurrence

Species (State Status)	Cliff and Canyon[1]	Desert Shrubland[1]	Ephemeral Wash	Herbaceous Wetland[1]	Open Water[1]	Saltbush Shrubland[1]	Woody Riparian and Wetlands[1]
Gila Woodpecker[3]		Low N, F, W					Low F, W
Red–naped Sapsucker[2]							Low N, F, W
Gilded Flicker[3] NV – SCP		Low N, F, W					Low N, F, W
Willow Flycatcher[3] NV – SCP							Low N, F
Loggerhead Shrike NV – SCP						High N, F, W	High N, F, W
Bell's Vireo[3] NV – SCP							Low N, F
Gray Vireo[3] CO – SGCN		Low N, F	Low F				
Verdin		High N, F, W	High F, W				
Cactus Wren		High N, F, W	High F, W				
Black–tailed Gnatcatcher		High N, F, W	High F, W				
Bendire's Thrasher[3] NV – SCP		Low N, F	Low N, F				
Crissal Thrasher		High N, F, W	High F, W			High N, F, W	High N, F, W
Le Conte's Thrasher[3] NV – SCP		High N, F, W	High F, W				High N, F, W

Table 3.22-19 Region IV BCC and PIF Species Habitat Associations and Potential for Occurrence

Species (State Status)	Cliff and Canyon[1]	Desert Shrubland[1]	Ephemeral Wash	Herbaceous Wetland[1]	Open Water[1]	Saltbush Shrubland[1]	Woody Riparian and Wetlands[1]
Phainopepla		High N, F, W	High F, W				High N, F, W
Lucy's Warbler							Moderate N, F
Yellow Warbler							Moderate N, F
Green–tailed Towhee[2]							Low N, F
Abert's Towhee		Moderate N, F, W	Moderate F, W				Moderate N, F, W
Brewer's Sparrow[3] NV – SCP; UT SGCN, Tier III						Low N, F	
Black–chinned Sparrow[3] NV – SCP		Low N, F	Low F				
Black–throated Sparrow		High N, F	High F				
Lincoln's Sparrow							Low F, W
Yellow–headed Blackbird[2]				Low N, F			Low F
Scott's Oriole NV – SCP		Moderate N, F					
Total BCC and PIF Species per Habitat	**5**	**22**	**13**	**5**	**3**	**9**	**18**

[1] Habitat types are considered priority in the Nevada SWAP or PIF Bird Conservation Plan.

[2] The species is designated as climate endangered in the 2014 Audubon Birds and Climate Change Report.

[3] The species is designated as climate threatened in the 2014 Audubon Birds and Climate Change Report.

Note: N = nesting habitat; F = foraging habitat; W = winter habitat.

Table 3.22-20 Region IV BCC and PIF Species and Associated Habitats Summary

Vegetation Community	Species with High Potential to Nest	Species with High Potential to Forage	Species with High Potential to Winter	Species with Moderate Potential to Nest	Species with Moderate Potential to Forage	Species with Moderate Potential to Winter	Species with Low Potential to Nest	Species with Low Potential to Forage	Species with Low Potential to Winter	Total Region IV BCC and PIF Species Per Habitat
Cliff and Canyon[1]	–	–	–	4	3	–	1	1	–	5
Desert Shrubland[1]	9	9	7	3	6	3	5	7	2	22
Ephemeral Wash	–	8	7	–	2	2	1	3	–	13
Herbaceous Wetland[1]	1	1	–	–	1	–	2	3	–	5
Open Water[1]	–	1	–	–	–	–	–	2	–	3
Saltbush Shrubland[1]	3	3	2	–	3	1	1	3	–	9
Woody Riparian and Wetlands[1]	4	4	4	3	4	1	6	9	5	18

[1] Habitats are considered priority in the Nevada SWAP or PIF Plan.

Note: Species can nest, forage, and winter in multiple habitat; therefore, the columns cannot be summed due to duplication.

3.22.6 Impacts to Migratory Bird Habitats and Species

Impacts to vegetation communities are reported in Section 3.5.6, Impacts to Vegetation Resources. Potential impacts to species and habitats that could occur at the terminal siting locations are presented first in this analysis because construction of these facilities would be necessary, regardless of the final alignment chosen. Impacts to BCC and PIF species based on acres of habitat disturbance are presented below. Many of these species' habitats include multiple vegetation communities and these communities may vary throughout the year. Thus, to determine the total potential impact to a species' habitat from an alternative or other Project component, it is necessary to sum the impact acreages for the applicable vegetation communities. Impact summary tables present disturbance acreages for vegetation communities along each alternative route and as associated with other Project components. Impact tables for other Project components and alternatives such as terminal siting areas, ground electrode system siting areas, alternative connectors, alternative variations, and micro-siting options also present impacts to BCC and PIF species habitats. The developed/disturbed land cover type is not considered to be suitable habitat and is not included in analyses or reported disturbance acreages, although some disturbance-tolerant species do utilize these areas.

Direct and indirect impacts to migratory bird species have been calculated based on the methodology described in Chapter 3.0, Introduction. Impacts resulting from construction and operation activities could occur within the refined transmission corridor and could extend to within 1 mile on each side of the preliminary engineered alignment. The 250-foot-wide transmission line ROW would be located within the refined transmission corridor. The precise locations of Project components are not yet known. However, the refined corridors would contain transmission line infrastructure, including towers and conductors, pulling and tensioning sites, and access roads where practicable, depending on site-specific resource and engineering constraints. Disturbance areas for access roads and temporary work areas such as concrete batch plants, staging areas, and other facilities would generally be confined to within 1 mile on each side of the preliminary engineered alignment. Temporary work areas would be removed and their sites fully reclaimed to BLM or other land management agency specifications following construction. The Project impact analysis area also includes the siting areas for terminals and ground electrode systems. The identification of habitats potentially impacted by Project activities is based on the vegetation communities that support different migratory bird species and guilds seasonally or throughout the year.

Corridor refinements and micro-siting adjustments to the proposed alternative routes have been included in this impact analysis and are described in detail in Section 2.5.1. These adjustments are located along Alternatives I-A, I-B, I-C, I-D, II-A, II-F, II-G, III-A, IV-A, and IV-B. Alternatives I-B and I-D have been widened slightly to accommodate possible micro-siting adjustments to avoid greater sage-grouse habitat. Alternatives I-A, I-B, and II-F have been adjusted slightly to address resource concerns. These Project adjustments have been incorporated to address concerns regarding USFS IRAs, BLM designated utility corridors, and occupied or seasonal greater sage-grouse habitat.

The Fruitland Micro-siting Options were developed in consideration of impacts to greater sage-grouse habitat, private land development, and existing conservation easements. These options range in length from approximately 13 to 15 miles and would impact the same types of vegetation communities as comparable segments of Alternatives II-A and II-G. The Strawberry IRA Micro-siting Options would avoid or minimize impacts to national forest IRAs along Alternatives II-A and II-G. 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.

Direct impacts, such as removal or alteration of habitat, expected from each alternative route within each Project region are analyzed based on the 250-foot-wide transmission line ROWs and preliminary engineered alignments. Although the 250-foot-wide direct disturbance corridor could shift within the larger refined transmission corridor based on site-specific conditions and final engineering design, for the purposes of this analysis, it is assumed that the disturbance corridor is centered on the identified alignment. Direct and indirect impacts to migratory bird species resulting from access road construction, construction and use of temporary facilities such as concrete batch plants, and habitat degradation due

to human presence or construction noise, are calculated based on the methodology described in Chapter 3.0, Introduction. Migratory bird habitat associations are based on the vegetation communities identified in **Table 3.22-1**.

Migratory bird-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. The primary impact issues and analysis considerations for migratory birds are listed in **Table 3.22-21**.

Impacts to migratory bird species and habitats would be avoided or minimized through the implementation of the following Project design features, agency BMPs, and proposed mitigation measures (**Appendix C**). These measures would apply during all phases of the Project through decommissioning and reclamation.

- WWEC BMPs:

  BMPs were obtained from the ROD for the WWEC and would be applied to all portions of the proposed transmission line within WWEC corridors to reduce impacts to resources.

  - ECO-1, ECO-2, ECO-3, ECO-4, ECO-6, ECO-7, and ECO-8 (protection of wildlife and habitats);
  - FIRE-1/FIRE-2 (fire management and fuel 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 NSO restrictions, CSO restrictions, and TL are outlined in **Appendix C**.
- Project Design Features:
  - TWE-1: The TWE Project will be planned, constructed, operated, and decommissioned in accordance with the agencies' RODs, the BLM's ROW grant stipulations, USFS Special Use Permit stipulations, and requirements of other permitting agencies.
  - TWE-2: The Applicant will comply with all applicable environmental laws and regulations. Applicable laws and regulations may include, but are not limited to, the CWA Section 303(d) and Section 404; the Wild and Scenic Rivers Act, Section 3(a) or 2(a) ii; the ESA, Section 7; the NHPA, Section 106; and the NAGPRA. Compliance with all applicable laws and regulations will be documented in the Final POD/COM Plan.
  - TWE-4: Prior to construction, all personnel will be instructed on the protection of cultural, paleontological, ecological resources, and other natural resources in accordance with the POD provisions. To assist in this effort, the construction contract would address (a) federal, state, and tribal laws regarding cultural resources, fossils, plants, and wildlife, including collection and removal; and (b) the importance of these resources and the purpose and necessity of protecting them.
  - TWE-13: In construction areas (e.g., marshalling yards, structure sites, spur roads from existing access roads) where ground disturbance is significant or where re-contouring is required, surface restoration will occur as required by the landowner or land management agency. The method of restoration will normally consist of returning disturbed areas back to their natural contour, reseeding (if required), installing cross drains for erosion control, placing water bars in the road, and filling ditches.

- TWE-14: The POD will show the location of borrow sites, from which material will be obtained. Borrow pits will be stripped of topsoil to a depth of approximately 6 inches. Stripped topsoil will be stockpiled and, upon completion of borrow excavation, spread to a uniform depth of 6 inches over areas of borrow pits from which it was removed. Before replacing topsoil, excavated surfaces will be reasonably smooth and uniformly sloped. The sides of borrow pits will be brought to stable slopes with slope intersection shaped to carry the natural contour of adjacent undisturbed terrain into the pit to give a natural appearance. When necessary, borrow pits will be drained by open ditches to prevent accumulation of standing water.
- TWE-16: Watering facilities (tanks, natural springs and/or developed springs, water lines, wells, etc.) will be repaired or replaced, if damaged or destroyed by construction activities, to their pre-disturbed condition as required by the landowner or land management agency.
- TWE-26: The POD will include a Reclamation Plan and a Noxious Weed Management Plan. The Reclamation Plan will address plant removal and selective clearing. The Noxious Weed Management Plan will be developed in accordance with appropriate land management agencies' standards, consistent with applicable regulations and agency permitting stipulations for the control of noxious weeds and invasive species (EO 13112). Included in the Noxious Weed Management Plan will be stipulations regarding construction, restoration, and operation (use of weed-free materials, washing of equipment, etc.).
- TWE-27: In construction areas where re-contouring is not required, vegetation will be left in place wherever possible and original contour will be maintained to avoid excessive root damage and allow for re-sprouting.
- TWE-28: Clearing will be performed in a manner that minimizes the marring and scarring the countryside and preserve the natural beauty to the maximum extent possible. Except for danger trees, no clearing will be performed outside the limits of the ROW.
- TWE-29: The POD will include a Wildlife and Plant Conservation Measures Plan, which will identify important, sensitive, or unique habitats and BLM sensitive, USFS Sensitive, and state-listed species in the vicinity of the TWE Project. The POD will identify measures to be taken to avoid, minimize, or mitigate impacts to these habitats and species.
- TWE-30: In applicable areas, the TWE Project will be designed to 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).
- TWE-31: Mitigation measures that will be developed during the consultation period with the BLM and the USFWS under Section 7 of the ESA will be adhered to, along with mitigation developed in conjunction with state authorities.
- TWE-32: Seasonal restrictions may be implemented in certain areas to mitigate impacts on wildlife. With the exception of emergency repair situations the activities of ROW construction, restoration, maintenance, and decommissioning will be modified or discontinued in designated areas during sensitive periods (e.g., nesting and breeding periods) for candidate, proposed or listed threatened and endangered, or other sensitive animal species, as required by permitting agencies. Potential seasonal restrictions and avoidance buffers for nesting raptors will be identified in the Draft EIS. The Wildlife and Plant Conservation Measures Plan will incorporate the seasonal restrictions and stipulations contained in the federal agency RODs.
- TWE-33: Prior to the start of construction, the Applicant will provide training to all Contractor and Subcontractor personnel and others involved in construction activities where/if there is a 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. The Applicant will remove markings during or following final inspection of the Project.

Table 3.22-21 Relevant Impact Analysis and Mitigation Considerations for Migratory Bird Species

Construction Impacts	Operation/Maintenance Impacts	Indirect Impacts	Potential Effects	Impact Measure in Final EIS	Mitigation Measures
Collisions with vehicles	Collisions with vehicles	Not Applicable	• Direct mortality of migratory birds • Indirect mortality of eggs or dependent young	• Miles of existing roads along each alternative route • Miles of roads associated with each alternative route • Density of roads along each alternative route	REC-2, ECO-8, ECO-4, ECO-8, TWE-33, WLF-1, WLF-2, WLF-10, SSWS-1
Crushing of nests	Crushing of nests	Not Applicable	• Direct mortality of migratory birds, eggs, nestlings, and juveniles	• Miles of existing roads along each alternative route • Miles of roads associated with each alternative route • Density of roads along each alternative route	ECO-4, ECO-8, TWE-32, TWE-33, WLF-1, WLF-2, WLF-10, SSWS-1 Preconstruction nest surveys and established buffers
Nest abandonment	Nest abandonment	Loss of breeding habitat, reduced productivity for the breeding season	• Direct mortality of eggs, nestlings, and dependent young	• Acres of suitable habitat • Known raptor nests within 1 mile of Project alternatives and components	ECO-4, ECO-6, TWE-32, TWE-33, WLF-1, WLF-2, WLF-10, SSWS-1 Preconstruction nest surveys and established buffers
Increased predation by other avian species, mammals, snakes, and feral cats	Increased predation by other avian species, mammals, snakes, and feral cats	Increased predation by other avian species, mammals, snakes, and feral cats	• Direct mortality of migratory birds • Indirect mortality of eggs or dependent young • Direct mortality of eggs, nestlings, and dependent young	• Number of transmission towers equates to number of potential raptor and raven perches • Impacts of increased predation by raptors and corvids (e.g., ravens, crows) on avian prey species are evaluated in qualitative terms.	TWE-61, WLF-10, REC-2
Creation of mammalian predator travel lanes	Creation of mammalian predator travel lanes	Creation of mammalian predator travel lanes	• Increased predation of migratory birds, eggs, and nestlings • Avoidance of otherwise suitable breeding and foraging habitat	• Miles of existing roads along each alternative route • Miles of roads associated with each alternative route • Density of roads along each alternative route • Acres of habitat removal or alteration along the Project ROW and other disturbance areas	TWE-61, WLF-10, REC-2 Preconstruction nest surveys and established buffers
Habitat loss, alteration, degradation, and fragmentation	Habitat loss, alteration, degradation, and fragmentation	Habitat loss, alteration, degradation, and fragmentation	• Reduction in foraging and breeding success due to displacement into less suitable habitat • Reduction in foraging and breeding success due to displacement into habitats and territories already at carrying capacity • Reduction in suitable migration habitat resulting in increased stress and energy expended in search of food and cover during an energy intensive activity • Lower wildlife density	• Acres of potential habitat located within the 250-foot-wide transmission line ROW and disturbance areas for access roads and temporary work areas are reported. • 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 avian 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. • 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 within potential disturbance areas.	ECO-1, ECO-2, ECO-3, ECO-4, ECO-6, TWE-13, TWE-14, TWE-16, TWE-26, TWE-27, TWE-28, TWE-29, TWE-33, TWE-61, WLF-3, WLF-5, WLF-6, WLF-7, WLF-10, REC-2
Not Applicable	Electrocution	Not Applicable	• Direct mortality of migratory birds	• Miles of existing transmission line along each alternative route • Configuration of Project facilities • Miles of transmission line and number of tower structures associated with low voltage lines to electrode beds	TWE-30
Collisions with power lines and guy wires	Collisions with power lines and guy wires	Not Applicable	• Direct mortality of migratory birds	• Miles of transmission line	ECO-8, TWE-30, WLF-4, WLF-5, WLF-6, WLF-7, WLF-8, WLF-9

Table 3.22-21 Relevant Impact Analysis and Mitigation Considerations for Migratory Bird Species

Construction Impacts	Operation/Maintenance Impacts	Indirect Impacts	Potential Effects	Impact Measure in Final EIS	Mitigation Measures
Species displacement	Species displacement	Species displacement	• Reduction in foraging and breeding success due to displacement into less suitable habitat • Reduction in foraging and breeding success due to displacement into habitats and territories already at carrying capacity	• Acres of potential habitat located within the 250-foot-wide transmission line ROW and disturbance areas for access roads and temporary work areas are reported. • 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 avian 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. • 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 within potential disturbance areas.	ECO-6, TWE-32, TWE-33, TWE-34, WLF-1, WLF-2, WLF-3, WLF-10, SSWS-1, SSWS-13, REC-2
Increased nest parasitism	Increased nest parasitism	Increased nest parasitism	• Decreased breeding success	• Increased nest parasitism as a factor of habitat fragmentation is qualitatively discussed. • Species-specific vulnerability to nest parasitism is qualitatively discussed.	WLF-1, WLF-2, WLF-10, REC-2
Increase in invasive plant species	Increase in invasive plant species	Increase in invasive plant species	• Habitat loss, alteration, and degradation	• Impacts related to invasive plant species are discussed in Section 3.5, Vegetation	ECO-2, VEG-2, VEG-3, VEG-4, REST-1, REST-2 , TWE-26, WLF-10, REC-2
Increased wildland fire risk	Increased wildland fire risk	Increased wildland fire risk	• Direct mortality of migratory birds, eggs, nestlings, and juveniles • Loss of breeding and foraging habitat • Habitat conversion to different vegetation communities • Habitat fragmentation	• Impacts related to wildland fire risk are discussed in Section 3.21, Wildland Fire.	TWE-64, FIRE-1, FIRE-2, FIRE-3, FIRE-4, WLF-10, REC-2
Increase in trash/human waste	Increase in trash/human waste	Increase in trash/human waste	• Increase in predators and scavengers • Habitat degradation	• Impacts related to increased trash and human waste are qualitatively discussed as factors of habitat degradation.	TWE-61. WLF-10, REC-2
Increase in off-road and other vehicle traffic	Increase in off-road and other vehicle traffic	Increase in off-road and other vehicle traffic	• Increased potential for direct mortality • Disruption of breeding and foraging behavior • Displacement of migratory birds into less suitable habitat • Displacement of migratory birds into habitats and territories already at carrying capacity • Crushing of nests, eggs, and nestlings	• Impacts related to increased off-road vehicle traffic are discussed in Section 3.13, Recreation.	WLF-10, REC-2, ECO-4, ECO-8
Creation of helicopter traffic	Creation of helicopter traffic	Creation of helicopter traffic	• Disruption of breeding and foraging behavior • Potential nest abandonment • Potential for direct mortality with helicopters	• Impacts from helicopter noise and movement are qualitatively discussed. Chapter 2.0 Project Description and Alternatives describes the use of helicopters for construction and operation of the Project.	ECO-8
Vegetation management including trimming, removal, and herbicide spraying	Vegetation management including trimming, removal, and herbicide spraying	Vegetation management including trimming, removal, and herbicide spraying	• Disruption of breeding and foraging behavior • Potential nest abandonment • Potential ingestion of toxic chemicals resulting in injury or mortality to adults and nestlings	• Impacts from vegetation management during operations and maintenance are qualitatively discussed. Vegetation management is discussed in Section 3.5, Vegetation.	ECO-1, ECO-2, ECO-4, VEG-2, TWE-13, TWE-26, TWE-27, TWE-28, TWE-29, WLF-5, WLF-6, WLF-7, SSWS-1, SSWS-13

Table 3.22-21 Relevant Impact Analysis and Mitigation Considerations for Migratory Bird Species

Construction Impacts	Operation/Maintenance Impacts	Indirect Impacts	Potential Effects	Impact Measure in Final EIS	Mitigation Measures
Increased human presence	Increased human presence	Increased human presence	• Nest abandonment	• Impacts of bird collisions from transmission lines on overall populations are evaluated in qualitative terms; Destruction of nests, eggs, and hatchlings from vegetation clearing activities. • A qualitative discussion of how construction and operation activities may displace or impact breeding activity for avian species is included. • Avian collision potential is described in both quantitative and qualitative terms. • Nest abandonment	NOISE-1, NOISE-2, ECO-4. ECO-7, ECO-8, TWE-4, TWE-32, TWE-33, TE-34, WLF-1, WLF-2, WLF-3, WLF-10, SSWS-1, SSWS-13, REC-2

- TWE-34: If evidence of a protected species not previously identified or known is found in the Project area, the Contractor will immediately notify the appropriate land management agencies and provide the location and nature of the findings.
- TWE-64: The POD will include a Fire Protection Plan. The Applicant or its Contractor(s) will notify the BLM of any fires and comply with all rules and regulations administered by the BLM and USFS concerning the use, prevention, and suppression of fires on federal lands, including any fire prevention orders that may be in effect at the time of the permitted activity. The Applicant or its Contractor(s) may be held liable for the cost of fire suppression, stabilization, and rehabilitation. In the event of a fire, personal safety will be the first priority of the Applicant or its Contractor(s). Specific actions required under TWE-64 are described in **Appendix C**.

- Proposed Mitigation Measures and Effectiveness:
  - ***WLF-1:*** *To minimize disturbance to migratory birds during the breeding and nesting season, no vegetation clearing or trimming, blasting, or other new surface-disturbing activities would occur during the avian breeding season as defined by Project Region and illustrated in* ***Figures 3.22-5, 3.22-8,*** *and* ***3.22-13****. If avoidance of vegetation clearing during the nesting season is not possible, then a qualified biologist would conduct nest searches no more than 7 days prior to clearing and trimming activities. Active nests would be identified and protected in accordance with the following procedure.*

    *On lands administered by the BLM and USFS, spatial avoidance buffers and seasonal restrictions would be applied as required by applicable land and resource management plan stipulations (****Appendix C****). On federal lands for which there are no stipulations applicable to non-raptorial migratory birds, the habitat- or species-specific nest buffers recommended by the BLM Ely District (BLM 2012) would apply. Seasonal and spatial nest buffers that are more restrictive than the applicable required BLM and USFS plan stipulations and BLM Ely District recommendations would be applied at the discretion of local federal and state wildlife management agency biologists. Additionally, the BLM Ely District-recommended nest buffers would be applied to all other land jurisdictions in coordination with TransWest and respective landowners whose lands would be crossed by the Project.*

    Effectiveness: This proposed mitigation measure would avoid or minimize impacts to nesting birds.

  - ***WLF-2****: To minimize disturbance to nesting raptors, no vegetation clearing or trimming, blasting, or other new surface-disturbing activities would occur within the appropriate spatial buffer for an occupied nest during the breeding season of the species using it. Raptor breeding seasons vary widely based on species, weather conditions, prey availability, latitude, elevation, and other factors.* ***Figures 3.22-5****,* ***3.22-8****, and* ***3.22-13*** *present approximate raptor breeding seasons by species and Project region. If surface-disturbing activities within the appropriate spatial buffer cannot be avoided during the associated raptor nesting season, preconstruction raptor nest surveys and monitoring using agency-approved protocols would be performed to identify and protect occupied nests.*

    *Spatial avoidance buffers and seasonal restrictions would be applied as required by applicable BLM and USFS land and resource management plan stipulations (****Appendix C****) on lands administered by these agencies. Seasonal and spatial raptor nest buffers recommended by the USFWS and the appropriate state wildlife agency that are more restrictive than the applicable, required BLM and USFS plan stipulations would be applied at the discretion of these land management agencies (****Table 3.22-4****). Additionally, raptor seasonal and spatial buffers recommended by USFWS and the appropriate state wildlife agency would be applied to all other land jurisdictions in coordination with TransWest and respective landowners whose lands would be crossed by the Project.*

    Effectiveness: This mitigation measure would avoid or minimize impacts to nesting raptors.

- ***WLF- 3**: To ensure wildlife access to existing wildlife water developments (e.g., "guzzlers"), TransWest would avoid impacts to these developments to the extent possible during final project siting and development. TransWest would be required to offset the loss of any permanently impacted wildlife water developments by installing new developments of equal capacity, in coordination with the appropriate state wildlife agency.*

  Effectiveness: This proposed mitigation measure would ensure continued migratory bird access to wildlife water developments.

- ***WLF-4**: For the protection of migratory birds, TransWest would be required to install dark-sky lighting at all terminals, sub-stations, and series compensation facilities that is fully shielded to keep light from extending above the horizontal plane and is designed to provide the minimum amount of illumination necessary for safety and security purposes.*

  Effectiveness: This proposed mitigation measure would minimize collision risk to migratory birds, which could be attracted by lighting at Project components.

- ***WLF-5**: In Audubon Important Bird Areas crossed by the 250-foot-wide transmission line ROW, TransWest would employ line marking as recommended in Reducing Avian Collisions with Power Lines: The State of the Art in 2012 (APLIC 2012). In addition, vegetation management Level 3, as described in the Project Vegetation Management Plan, would be employed in IBAs crossed by the 250-foot-wide transmission line ROW.*

  Effectiveness: This proposed mitigation measure would minimize collision risk for migratory bird and raptor species that utilize Audubon Important Bird Areas. Impacts to IBA habitats would be minimized through implementation of vegetation management Level 3 techniques.

- ***WLF-6**: To minimize fragmentation impacts to forested habitats on public lands, TransWest would employ vegetation management Level 3, as described in the Project Vegetation Management Plan, to portions of the 250-foot-wide transmission line ROW located in forest and woodland habitat areas identified by local federal or state wildlife management agency biologists as being of particular importance to wildlife. In these areas, TransWest also would be required to leave downed woody debris greater than 3 inches in diameter (not including merchantable timber) in place to provide habitat for insects, small mammals, and other small prey species utilized by owls, raptors, and other predators.*

  Effectiveness: This proposed mitigation measure would minimize habitat fragmentation in forested areas and would provide downed woody debris for production of prey species.

- ***WLF-7**: In BHCAs, TransWest would employ line marking as recommended in Reducing Avian Collisions with Power Lines: The State of the Art in 2012 (APLIC 2012). In addition, vegetation management Level 3, as described in the Project Vegetation Management Plan, would be employed in BHCAs crossed by the 250-foot-wide transmission line ROW on public lands.*

  Effectiveness: This proposed mitigation measure would minimize collision risk for migratory bird and raptor species in areas of conservation priority (BHCAs). Impacts to BHCA habitats would be minimized through implementation of vegetation management Level 3 techniques.

- ***WLF-8**: To minimize collision potential for avian species, TransWest would design the Project to meet or exceed the standards described in the Reducing Avian Collisions with Power Lines: The State of the Art in 2012 (APLIC 2012).*

  Effectiveness: This proposed mitigation measure would minimize avian collision potential.

- ***WLF-9**: To minimize collision potential for avian species, TransWest would be required to install avian flight diverters on all guy wires in all areas of priority migratory bird habitats which include IBAs, BHCAs, riparian crossings, and other sensitive habitats identified in coordination with land management, USFWS, and applicable state wildlife agencies.*

TransWest also would be required to install flight diverters on guyed structures at tower locations identified by post construction monitoring as having high collision potential.

Effectiveness: This proposed mitigation measure would minimize avian collision potential.

- ***WLF– 10**: To avoid or minimize long-term disturbance to wildlife associated with public use of the ROW and new access roads during Project operation, these roads would be closed or rehabilitated using methods and monitoring developed through consultation with the landowner or land management agency. Depending on facility and ROW maintenance needs, methods for closure could include gates, obstructions such as berms or boulders, or partial or full restoration to natural contour and vegetation.*

  Effectiveness: This proposed mitigation measure would minimize impacts to migratory bird species and their habitats by limiting public access. Limiting public access would decrease human disturbance to migratory birds, particularly nesting birds, and prevent habitat degradation by humans and vehicles. This proposed mitigation measure also would reduce the potential for nest abandonment due to noise and human activity.

- ***REC-2**: Within designated recreation management areas, access shall be limited to existing roads whenever practicable. If new and improved access cannot be avoided within these areas, access roads shall be closed or rehabilitated through methods and monitoring developed through consultation with the landowner or land management agency. Methods for closure could include gates, obstructions such as berms or boulders, or partial or full restoration to natural contour or vegetation.*

  Effectiveness: This proposed mitigation measure would minimize disturbance to migratory birds, particularly nesting birds.

- ***SSWS-1**: In order to protect nesting mountain plovers, TransWest would follow the USFWS 2002 Mountain Plover Survey Guidelines and would conduct mountain plover nest surveys if construction were to occur in suitable habitat, as identified by the BLM and applicable state wildlife agency, during the mountain plover breeding season (April 10 to July 10). If a nest is located, a 0.25–mile protection buffer would be implemented around the active nest until the birds fledge from the nest.*

  Effectiveness: This proposed mitigation measure would minimize potential impacts to nesting mountain plovers.

- ***SSWS-13**: To prevent impacts to bald eagles, TransWest would be required to avoid disturbance within 0.25 mile of an active winter roost site (0.5 mile if there is a direct line of sight to disturbance) from November 15 to March 15 and avoid disturbance within 0.5 mile of communal winter roosts from November 1 to April 1. Construction of aboveground structures would be restricted within 0.5-mile of bald eagle nests and communal winter roost sites. Below ground structures (e.g., pipelines, buried power lines, fiber optic lines) may be sited closer as long as construction occurs outside of the active nesting or roosting season and would not result in the loss of alternate nest sites or roost trees.*

  Effectiveness: This proposed mitigation measure would minimize potential impacts to nesting and wintering bald eagles.

In addition to the measures described above, the applicant-prepared HEA and compensatory mitigation plan for greater sage-grouse habitat also would benefit other species that occur within occupied greater sage-grouse habitat. These vegetation communities include sagebrush shrubland and areas of herbaceous wetland, riparian, and grassland habitats adjacent to occupied habitat. Details regarding the HEA and compensatory mitigation plan are discussed in Section 3.8.6.3, Special Status Wildlife Species, and in **Appendix J**. The application of proposed mitigation measure **SSWS-5**, as discussed in Section 3.8.6, Impacts to Special Status Wildlife Species, also would minimize impacts to other migratory bird species that utilize sagebrush shrubland habitat.

The impact analysis for avian species assumes that the BLM and USFS would continue to manage migratory bird habitats in coordination with CPW, NDOW, UDWR, and WGFD. Further assumptions are that the design features and BMPs committed to by TransWest would be implemented under all alternatives, regardless of land ownership.

3.22.6.1 Impacts to Migratory Bird Habitats and Associated Species from Terminals

Section 2.4, Elements Common to All Action Alternatives, describes the Northern Terminal, Southern Terminal, Southern Terminal Alternate, Southern Terminal located near IPP (Design Option 2), and Southern Substation located near IPP (Design Option 3). Vegetation communities potentially impacted at terminal siting areas are presented below. No national forests would be impacted by terminal construction or operation.

Potential impacts to migratory bird species and associated habitats at terminal sites can be grouped into two main categories: construction and operation. Construction-related impacts are primarily habitat loss, fragmentation, and mortalities as a result of vehicle collisions and crushing of nests. 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 identified as impacts that occur after interim reclamation has been completed and result from normal operation and maintenance activities. Construction-related impacts are typically short-term, whereas operation impacts are typically long-term. Examples of potential operation impacts include habitat fragmentation and disturbance in areas where facilities would be sited, periodic vegetation management activities, mortalities that occur as a result of collisions with Project facilities or maintenance vehicles or equipment, increased risk of wildland fires, and habitat degradation resulting from increased noise and human activity. Although there is some potential for electrocution of migratory birds to occur during operation of the Project terminals, electrocutions associated with substation operations are uncommon (APLIC 2006). New substations can use a combination of framing and covering to prevent contacts by birds. The Applicant's commitment to using raptor-safe designs (TWE-30) will ensure that electrocution-related impacts to wildlife are avoided or minimized at the Project terminals. During operation of the Project, a portion of habitat disturbed during construction would not be reclaimed until the end of the Project's design life (decommissioning).

Impacts to habitat 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. Indirect impacts are those that are separated by time and or space from direct impacts of construction and operation of the Project. The primary potential indirect impact from terminals to migratory bird species is the avoidance of otherwise suitable habitat in and around terminal sites during construction and operation. The primary operation-related impact associated with terminals is likely to be mortality as a consequence of collision with Project components. Other potential impacts include 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 result from maintenance activities.

<u>Northern Terminal Siting Area</u>

Habitat Disturbance and Fragmentation

The existing conditions at the Northern Terminal siting area relative to migratory bird potential habitats 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 I-80 and SH-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 extending from the roads in both directions. In addition, the Northern Terminal siting area is fragmented by several existing pipelines, ROWs, SH-71 to the west and a Union Pacific rail line to the north. Other notable sources of disturbance near the Northern Terminal siting area include the Sinclair petroleum refinery located approximately 3 miles to the northeast and the Wyoming State Penitentiary located approximately 3.4 miles to the west.

Migratory Bird Habitat

Potential direct impacts to migratory bird habitats at the Northern Terminal siting area would include construction and operation impacts to approximately 491 acres and 236 acres, respectively, of potentially suitable nesting, foraging, and winter habitat. These areas represent <0.01 percent of potentially suitable habitat within the Region I analysis area. Five vegetation communities would only be impacted on one acre or less: barren/sparsely vegetated, conifer forest, dunes, grassland, and open water.

The remaining areas of disturbance would be reclaimed at the end of the Project life (estimated at 50 years).

No IBAs or BHCAs occur in the vicinity of the Northern Terminal siting area.

Migratory Bird Species

Impacts to migratory bird species from surface disturbance would include the loss, alteration, and fragmentation of habitat. Habitat loss or alteration would result in direct losses of nests, eggs, nestlings, and juveniles that are still dependent on the nest site and the displacement of adults into adjacent habitats. The primary operation-related impact to migratory birds is habitat fragmentation caused by the presence of Project facilities on the landscape. Habitat fragmentation would result in decreased habitat availability to migratory bird species that require undisturbed, intact tracts of habitat.

Raptor species may either seasonally occupy or remain as yearlong residents in the habitats found at the Northern Terminal siting area. Raptor and migratory bird species that could occur in the Region I analysis area, which includes the Northern Terminal siting area, are described in Section 3.22.5.2. Common ravens are not considered raptors but ravens may utilize historic raptor nests and, conversely, raptors may add to and/or utilize historic raven nests. Impacts to migratory bird 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 estimated breeding season for Region I (**Figure 3.22-5**), direct impacts to breeding birds 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.

BCC and PIF species that could occur at the Northern Terminal siting area would be the same as those identified for Region I and impacts to these species would be the same as described for migratory bird species.Impacts to migratory bird species and habitats at the Northern Terminal siting area would be minimized with the implementation of the following design features and proposed mitigation measures:

- Applicable design features: TWE-1, TWE-2, TWE-4, TWE-13, TWE-14, TWE-16, TWE-26, TWE-27, TWE-28, TWE-29, TWE-30, TWE-31,TWE-32, TWE-33, TWE-34, and TWE-64; and
- Applicable mitigation measures: **WLF-1**, **WLF-2**, **WLF-3**, **WLF-4**, **WLF-6**, **WLF-8**, **WLF-9**, **WLF-10**, **SSWS-1**, and **REC-2**.

Design features, proposed mitigation measures, and effectiveness statements are presented in Section 3.22.6, Impacts to Migratory Bird Species. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to migratory bird species would be limited to habitat loss and fragmentation; potential mortality from collisions with Project components and vehicles; and disturbance resulting from operations and maintenance activities.

<u>Southern Terminal and Southern Terminal Alternate Siting Area</u>

Habitat Disturbance and Fragmentation

The existing conditions at the Southern Terminal and Southern Terminal Alternate siting area relative to migratory bird potential habitats can be characterized as moderately disturbed and fragmented. The

majority of disturbance near the siting area results from US-95 located approximately 3.5 miles to the east. This highway is a major source of fragmentation in the local area. An existing electrical substation, located approximately 0.5 mile to the southwest and the Solar One energy plant, located approximately 1.5 miles to the southeast of the siting area contribute to existing disturbance and fragmentation adjacent to 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.

Migratory Bird Habitat

Construction and operation of the Southern Terminal and the Southern Terminal Alternate would mostly occur in developed/disturbed areas. Although the developed/disturbed land cover type is not considered to be suitable habitat and is not included in analyses or reported disturbance acreages, some disturbance-tolerant species utilize these areas. Eleven percent of the siting area is desert shrubland. Consequently, species associated with this habitat type in the region could be impacted. The Southern Terminal Alternate would potentially impact more desert shrubland habitat than the Southern Terminal, but no substantive impacts to migratory bird habitat resulting from construction of the Southern Terminal or the Southern Terminal Alternate are anticipated.

Potential direct impacts to migratory bird habitats at the Southern Terminal would include construction and operation impacts to approximately 63 acres and 25 acres, respectively, of potentially suitable nesting, foraging, and winter habitat. These areas represent 0.01 percent of potentially suitable habitat within the Region IV analysis area. The remaining areas of disturbance would be reclaimed at the end of the Project life (estimated at 50 years).

Potential direct impacts to migratory bird habitats at the Southern Terminal Alternate would include construction and operation impacts to 85 acres and 29 acres, respectively, of potentially suitable nesting, foraging, and winter habitat. These areas represent 0.01 percent of potentially suitable habitat within the Region IV analysis area. The remaining area of disturbance would be reclaimed at the end of the Project life (estimated at 50 years).

No IBAs or BHCAs occur in the vicinity of the Southern Terminal or Southern Terminal Alternate siting area.

Migratory Bird Species

Impacts to migratory bird species from surface disturbance would include the loss, alteration, and fragmentation of habitat. Habitat loss or alteration would result in direct losses of nests, eggs, nestlings, and juveniles that are still dependent on the nest site and the displacement of adults into adjacent habitats. Habitat fragmentation would result in decreased habitat availability to migratory bird species that require undisturbed, intact tracts of habitat.

Raptor species may either seasonally occupy or remain as yearlong residents in the habitats found at the Southern Terminal(s) siting area. Raptor and other migratory bird species that occur in the Region IV analysis area, which includes the Southern Terminal and Southern Terminal Alternate siting area, are described in Section 3.22.5.5, Migratory Bird Species. Common ravens are not raptors but ravens may utilize historic raptor nests and, conversely, raptors may add to and/or utilize historic raven nests. Impacts to migratory bird 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 Southern Terminal or Southern Terminal Alternate was to occur during the estimated breeding season for Region IV (**Figure 3.22-13**), direct impacts to breeding birds 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. BCC and PIF species that could occur at the Southern Terminal siting area would be the same as those identified for Region IV and impacts to these species would be the same as described for other migratory bird species.

Impacts to migratory bird species and habitats at the Southern Terminal siting area would be minimized with the implementation of the following design features and proposed mitigation measures:

- Applicable design features: TWE-1, TWE-2, TWE-4, TWE-13, TWE-14, TWE-16, TWE-26, TWE-27, TWE-28, TWE-29, TWE-30, TWE-31, TWE-32, TWE-33, TWE-34, AND TWE-64; and
- Applicable mitigation measures: **WLF-1**, **WLF-2**, **WLF-3**, **WLF-4**, **WLF-8**, **WLF-9**, **WLF-10**, and **REC-2**.

Design features, proposed mitigation measures, and effectiveness statements are presented in Section 3.22.6, Impacts to Migratory Bird Species. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to migratory bird species would be limited to habitat loss and fragmentation, potential mortality from collisions with Project components and vehicles, and disturbance resulting from operations and maintenance activities.

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 migratory birds and BCC or PIF species 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 affect migratory birds and are discussed in Section 3.5.6.1.

Table 3.22-22 provides a summary of potential impacts associated with Design Option 2. Impacts from Design Option 2 facilities would be similar to impacts described in Section 3.22.6. The same design features, BMPs, and mitigation measures described for the Northern Terminal would be implemented to minimize impacts resulting from Design Option 2. Impacts to each vegetation community would be less than 1 percent of the total of each community present in the analysis area.

Table 3.22-22 Summary of Design Option 2 Impact Parameters

Design Option 2 DC/AC Converter/Substation
• 5 miles of low-voltage electrode bed interconnection lines.[1] • Approximately 156 acres of construction impacts and 93 acres of operation impacts to migratory bird potential habitat would occur. • No construction or operation impacts to BHCAs or IBAs would occur. • Ten raptor nests are known to occur within 1 mile.[2]

[1] Length refers to length of the electrode lines and provides a measure of avian collision potential.

[2] Nests of unknown raptor species are tabulated in both Sections 3.8 and 3.22 because they may have been utilized by either special status or non-special status raptor species.

Design Option 3 – Phased Build Out

The Substation located near IPP (Design Option 3) is entirely within the boundaries of the Southern Terminal located near IPP (Design Option 2). Implementation of Design Option 3 would utilize the same alternative routes, facilities, and construction techniques as the proposed Project in a phased approach. Operation impacts to avian species would be anticipated to similar to those resulting from operation of the Southern Terminal located near IPP (Design Option 2).

Table 3.22-23 provides a summary of potential impacts associated with Design Option 3.

Table 3.22-23 Summary of Design Option 3 Substation Impact Parameters

Design Option 3 Substation
• 56 miles of low-voltage electrode bed interconnection lines. • Approximately 138 acres of construction and 75 acres of operation impacts to migratory bird potential habitat would occur. • No construction or operation impacts to BHCAs or IBAs would occur. • Ten raptor nests are known to occur within 1 mile.[2]

[1] Length refers to length of low-voltage electrode bed interconnection lines and provides a measure of avian collision potential.

[2] Nests of unknown raptor species are tabulated in both Sections 3.8 and 3.22 because they may have been utilized by either special status or non-special status raptor species.

Migratory Bird Habitat

Operation of the Southern Terminal located near IPP (Design Option 2) would mostly occur in the grassland, greasewood flat, and saltbush shrubland vegetation communities. Approximately 44 percent of the siting area is within saltbush shrubland. Consequently, species associated with these habitat types in the Project region potentially could be impacted.

Migratory Bird Species

Acres of operation disturbance to migratory bird habitat are presented above. Impacts from operations are similar to those presented in the construction impacts discussion; however, they are less intensive and longer in duration. The additional operation-related impact discussion below describes specific potential for avian disturbance and mortality during operation of the Project. Information regarding proposed Design Options 2 and 3 is described in Section 2.4.3.1. Operation-related impacts to BCC and PIF species would be the same as described for other migratory bird species.

Operational impacts to migratory bird species and habitats at the terminal siting areas and Design Options 2 and 3 would be minimized with implementation of the following design features and mitigation measures.

- Applicable design features: TWE-1, TWE-2, TWE-26, TWE-29, TWE-30, TWE-31, TWE-32, and TWE-64; and
- Applicable mitigation measures: **WLF-1**, **WLF-2**, **WLF-3**, **WLF-4**, **WLF-6**, **WLF-8**, **WLF-9**, **WLF-10**, and **REC-2.**

Design features, proposed mitigation measures, and effectiveness statements are presented in Section 3.22.6, Impacts to Migratory Bird Species and Associated Habitats. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to migratory birds would be limited to habitat loss, alteration, and fragmentation, mortality resulting from collisions, and disturbance during maintenance activities.

<u>Impacts to Migratory Bird Species and Associated Habitats from Terminal Decommissioning</u>

Impacts to migratory bird species and associated habitats during decommissioning of the Northern Terminal, Southern Terminal, Southern Terminal Alternate, 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 at these siting areas.

3.22.6.2 Impacts Common to All Alternative Transmission Line Routes and Associated Components

Potential impacts to migratory bird species and associated habitats from the alternative transmission line routes can be grouped into two main categories, construction and operation. Construction–related impacts are primarily those associated with habitat loss, conversion, degradation, and fragmentation,

and potential avian mortalities resulting from vehicle and facility collisions, crushing of nests, and nest abandonment. Construction impacts are those disturbances caused during construction of the proposed Project, including vegetation treatment and removal, increased human activity, and increased noise levels. Operation impacts are those disturbances that remain after reclamation of temporary construction use facilities is complete. Operation-related impacts will last at least as long as the Project is in operation and maintenance activities are conducted (estimated at 50 years). Construction–related impacts are typically short–term, whereas operation impacts are typically long–term. Examples of potential operation-related impacts include habitat disturbance resulting from periodic vegetation management activities, application of herbicides, increased risk of wildland fire, avian mortalities that occur as a result of maintenance activities, increased predation of local prey populations by perching raptors, habitat degradation resulting from increased noise and human activity along the Project disturbance areas, and habitat fragmentation.

Construction and operation of transmission lines and associated access roads (e.g., two–tracks, mowed or cleared access ways) would increase the availability of travel corridors for terrestrial mammalian predators (Gelbard and Belknap 2003; SAIC 2001). During operation of the Project, a portion of habitat disturbed during construction would not be reclaimed until after the end of the Project design life (decommissioning). Timeframes for successful reclamation can vary depending on multiple factors including soil types and conditions, climate (e.g., drought persistence), noxious weed invasions, and effective monitoring and adaptive management in problem areas. Mitigation measure **VG-1** (**Table C.5 1**) would require TransWest to develop site-specific reclamation strategies and seed mixes in areas determined by the BLM or the appropriate land management agency to have soils with low reclamation potential. Reclaimed areas would be monitored annually by the applicant to ensure that successful reclamation is occurring. The length of time for the annual monitoring and the definition of successful reclamation would be determined by the appropriate land management agency. Subsequent actions in areas without successful reclamation would be determined in consultation with the appropriate land management agency.

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

The primary impacts associated with operation of power lines and associated facilities are avian mortalities as a consequence of electrocution or collision with Project components. Electrocution is primarily associated with smaller (i.e., 60-kV or less) transmission lines, due to the size of towers and closer spacing of the wires (APLIC 2006). For the proposed Project, the ±600-kV conductors would be separated by 40 to 50 feet, thereby posing no threat of electrocution to wildlife. The portions of the low-voltage electrode lines that would connect the AC/DC converter stations with the ground electrode beds would have some potential to cause avian electrocutions where they are not co-located with the ±600-kV DC transmission line. These portions of the electrode lines would be located on single pole structures similar to those used for a modified 34.5-kV distribution line. Because these lines would only be used at high currents for, on average, 30 hours per year and because the two conductors would be separated by approximately 6 feet (5 feet is the APLIC [2006]-recommended separation distance for protection of eagles), the probability of the electrode lines causing any avian electrocutions would be very low.

The potential for collision impacts is influenced by species characteristics and environmental factors. The manner in which birds utilize habitats near transmission lines affects the probability of collisions (APLIC 2012). Collision risk is greater for birds that make regular and repeated flights between nesting, foraging, and roosting areas in proximity to transmission lines (APLIC 2012). Other potential impacts include 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 maintenance activities. Increased predation by corvids and other predatory and scavenging species, which tend to accompany human presence, also may increase.

Analysis Methodology

In addition to calculating acreages of direct and indirect impacts to avian habitats, a variety of metrics were used to analyze impacts to migratory bird species, particularly BCC and PIF species, by Project region and alternative. These metrics are summarized below. Utilizing these metrics, alternatives can be ranked in order from greatest impact (1) to least impact (3-7, depending on the number of alternative routes in the region). Thus, the alternative with the lowest score would result in the greatest impact to regional priority avian habitats and associated avian species. These scores can be used to rank alternatives relative to potential impacts to migratory bird habitat. It is assumed that species associated with impacted nesting, foraging, and winter habitats would be impacted to the same proportionate degree as the habitats with which they are associated. Species that are considered obligates for a particular habitat type would be disproportionately impacted by disturbance in those areas, particularly relative to breeding and nesting habitats. The following descriptions provide details of the metrics used in this analysis.

- Total Indirect Impacts to Priority Habitats: The total acreage of direct and indirect impacts to priority habitats can be compared among alternatives.
- Total Indirect Impacts to Non-sagebrush Priority Habitats: Impacts to sagebrush shrubland habitat would be largely mitigated though TransWest's greater sage-grouse HEA process (Section 3.8.6.3 and **Appendix J**) regardless of the action alternative selected. This metric discloses the acreages of impacts to the other priority habitats traversed by each alternative and provides a basis for comparing relative impacts to non-mitigated priority habitats among alternatives.
- Total Indirect Impacts to Wetland, Riparian and Open Water Priority Habitats: Riparian and wetland habitats are the most important habitats relative to avian diversity in the arid west (as described below). Potential impacts to these habitats can be compared among alternatives.
- Total Indirect Impacts to Priority Habitats along Non-co-located Segments: Co-location refers to areas where the transmission line would be sited with existing aboveground utilities. Co-locating large transmission lines reduces additional habitat fragmentation by concentrating disturbance in a smaller area. Impacts to priority habitats along portions of an alternative that are not co-located with existing aboveground utilities can be compared among alternatives.
- Total Construction Impacts to Priority Habitats: Potential construction impacts to priority habitats can be compared among alternatives. These impacts also can be compared relative to priority habitats within IBAs and BHCAs that are within the Project's potential disturbance area.
- Total Operation Impacts to Priority Habitats: Potential operation impacts to priority habitats can be compared among alternatives. These impacts also can be compared relative to priority habitats within IBAs and BHCAs that are within the Project's potential disturbance area.
- Total Indirect Impacts to Audubon IBA and BHCA Priority Habitats: Impacts to these priority avian habitats can be compared among alternatives.
- Total Length of Alternative: The length of each alternative can be compared. The longer the alternative route, the greater the amount of habitat disturbance that occurs. The length of the transmission line under each alternative also provides a measure of avian collision potential. The longer the transmission line, the greater the risk of avian collision along each alternative.

Construction Impacts

Migratory Bird Habitat

Construction of the proposed Project would result in the loss, alteration, degradation, and fragmentation of potential migratory bird habitat, of which a percentage would be immediately reclaimed following construction of the facilities. The remaining disturbance areas would be reclaimed at the end of the life of

the Project (estimated at 50 years). Recovery times for the various vegetation communities that provide habitat for avian species within the analysis area are discussed in Section 3.5, Vegetation.

Habitat loss or alteration from surface disturbance would result in direct losses of less mobile birds, such as eggs, nestlings, and juveniles that are still dependent on the nest site. Adult birds would be displaced into adjacent habitats, depending on the carrying capacity of the area. 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 migratory bird species to varying degrees depending on the geographic location, type of habitat disturbed, and species potentially impacted. There are seven general impacts to habitat associated with roads including: 1) increased mortality from road construction; 2) increased mortality from collisions with vehicles; 3) modification of avian 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).

IBA and BHCA Habitats

A total of 21 IBAs and 47 BHCAs occur within or near the analysis area, but not all would be directly impacted. As discussed in Section 3.22.4.1, these areas support a higher diversity of migratory bird species than surrounding areas and encompass critical breeding, foraging, migration, or winter habitat for both common and sensitive avian species. The types of impacts to IBAs and BHCAs would be similar to those described in Section 3.22.6.2. Impacts to these important migratory bird habitats would be minimized with implementation of the following design features and mitigation measures.

- Applicable design features: TWE-2, TWE-4, TWE-13, TWE-14, TWE-16, TWE-26, TWE-27, TWE-28, TWE-29, TWE-30, TWE-32, TWE-33, TWE-34, and TWE-64; and
- Applicable mitigation measures: **WLF-1, WLF-2, WLF-3, WLF-4, WLF-5, WLF-6, WLF-7, WLF-8, WLF-9, WLF-10, REC-2, SSWS-1,** and **SSWS-13**.

Migratory Bird Species

Raptor species may either seasonally occupy or remain as yearlong residents in the habitats found within the analysis area. Potential direct impacts to raptors would include the loss or alteration of potentially suitable breeding, roosting, foraging, migration, and winter habitat. Impacts to raptor species also could result from a 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 disturbed 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).

Species that inhabit the analysis area may be impacted by construction activities. Potential direct impacts to migratory bird species would include the construction and operation disturbance of potentially suitable breeding, roosting, foraging, migration, or winter 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 estimated overall migratory bird breeding season (approximately February 1 – July 31, depending upon species, location, and other factors), 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. If construction of the proposed Project was to occur during the estimated raptor breeding season (January 1 – September 15, depending upon the species, location, and environmental factors), impacts to breeding raptors could include the loss of nests or nest abandonment caused by increased noise and human activity in proximity to an active nest site.

Impacts to migratory bird habitats would be minimized with implementation of the following design features and mitigation measures.

- Applicable design features: TWE-2, TWE-4, TWE-13, TWE-14, TWE-16, TWE-26, TWE-27, TWE-28, TWE-29, TWE-30, TWE-32, TWE-33, TWE-34, and TWE-64; and
- Applicable mitigation measures: **WLF-1, WLF-2, WLF-3, WLF-4, WLF-5, WLF-6, WLF-7, WLF-9, WLF-10,** and **REC-2**.

Design features, proposed mitigation measures, and effectiveness statements are presented in Section 3.22.6, Impacts to Migratory Bird Species. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to migratory bird species would be limited to habitat loss, fragmentation, potential mortality from collisions, and disturbance during maintenance activities. Construction impacts to BCC and PIF species and associated habitats would be the same as those described for other migratory bird species in Section 3.22.6.2. Impacts to BCC and PIF species and habitats would be minimized with implementation of the design features and mitigation measures described above for migratory bird species.

Operation Impacts

Migratory Bird Habitats

Potential impacts to migratory bird habitats can be grouped into two main categories: construction and operation. Construction-related impacts are primarily habitat loss, fragmentation, and mortalities as a result of vehicle collisions and crushing of nests. 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 identified as impacts that occur after interim reclamation has been completed and result from normal operation and maintenance activities. Construction-related impacts are typically short-term, whereas operation impacts are typically long-term.

Long-term habitat loss, degradation, and fragmentation would occur as a result of Project operation. Habitat loss and degradation affect all species that occupy a particular habitat type. Species that require large intact landscapes are vulnerable not only to changes in local habitat condition, but also to the compounding of multiple threats across the landscape. Other species may not have large home ranges but they are most abundant in areas where large habitat tracts remain intact.

Habitat fragmentation generally occurs through habitat loss and involves both a reduction in habitat area and change in habitat distribution. Fragmentation can be considered at a range-wide scale, a population scale and a home-range scale. Fragmentation at the range-wide scale can affect dispersal between populations; at the population scale, it can alter local population dynamics; and at the home range scale, it can affect individual survival and reproduction (Franklin et al. 2002). At the home range scale, the consequences of habitat loss, degradation, and fragmentation include increased predation rates, decreased reproductive success, and increased brown-headed cowbird parasitism rates (GBBO 2010). Habitat fragmentation by the Project would be greatest in areas where the transmission line and other components would not be co-located with existing aboveground utilities. Maintenance and operation of new access roads also would contribute to habitat loss, degradation, and fragmentation.

IBA and BHCA Habitats

Operation-related impacts would be more pronounced in high quality habitats, such as those near Audubon IBAs and BHCAs. These areas have unique habitat (e.g., wetlands, playas, riparian areas) or geographical features (e.g., canyons, gorges, intact expanses of vegetation) that provide important habitat for migratory bird species throughout the year or during migration.

Migratory Bird Species

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 2005; Steenhof et al. 1993). Transmission line structures can impact avian prey 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). These species may then occur at higher densities than normal due to increased nesting locations and perches. For example, within on1e year of construction of a 372.5-mile transmission line in southern Idaho and Oregon, raptors and common ravens began nesting on the transmission poles. Within 10 years of construction, 133 pairs of raptors and ravens were nesting along this length of transmission line (Steenhof et al. 1993). Along a transmission line in Nevada, the mean number of the most common raptor species observed over a 6-year period, 1 year prior to and 5 years after construction of the line, remained relatively stable. However, the mean number of common ravens seen per survey point increased during the first 4 years after construction before declining the fifth year (Nonne et al. 2011).

Transmission lines pose a collision hazard for migrating and foraging avian species. Collision potential typically is dependent upon 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). 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, localized populations and endangered species (APLIC 2012; Faanes 1987). 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 where topographic features funnel birds through power line corridors (Bevanger 1990; Faanes 1987). While some avian species (e.g., upland game birds and certain migratory grassland species) are predominantly ground-dwelling, the risk for collision during flight is heavily dependent upon transmission line locations, such as locations between roosting and foraging areas or migration routes. The highest collision risk appears to occur where birds typically fly between foraging and roosting habitats, which are bisected with overhead lines (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 the bird's age), weather, and power line structural characteristics (APLIC 2006, 1994). Localized weather conditions such as fog increase collision potential. The static wire, also referred to as the shield or groundwire, has been determined to pose the greatest collision danger to birds (APLIC 2012; Faanes 1987). Research indicates that most collisions occur with static wires when birds increase their altitude in an apparent attempt to avoid conductor wires. Birds maneuvering to avoid the conductor wires actually increased collision risk with static wires. In the absence of static wires, most collisions could have been avoided. If power lines must be placed above ground, the risk of collision 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 (Erickson et al. 2005; Gehring et al. 2009; Manville 2009, 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.

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 flight 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, particularly juveniles, and other large species are particularly susceptible to collision (APLIC 2012). Other avian 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 potential for take-offs and landings to cross the transmission line level.

Operational impacts to migratory bird species and habitats would be minimized with implementation of the following design features and mitigation measures.

- Applicable design features: TWE-1, TWE-2, TWE-26, TWE-29, TWE-30, TWE-31, TWE-32, and TWE-64; and
- Applicable mitigation measures: **WLF-1**, **WLF-2**, **WLF-3, WLF-4**, **WLF-5**, **WLF-6**, **WLF-7**, **WLF-8**, **WLF-9**, **WLF-10, REC-2**, and **SSWS-13**.

Design features, proposed mitigation measures, and effectiveness statements are presented in Section 3.22.6. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to migratory birds would be limited to habitat loss, alteration, and fragmentation, mortality resulting from collisions, and disturbance during maintenance activities. Avian prey species also could be impacted due to the potential for increased avian predator populations nesting and perching on power line structures. Impacts from operation of the Project to BCC and PIF species would be the same as those described for migratory bird species.

Indirect Impacts

Analysis of Impacts to Migratory Bird Species as a Result of Human Activity and Noise

Indirect impacts from construction and operation of the Project would result from increased human activity and noise in the vicinity of the terminal sites, access roads, and ROW. Increased activity and noise levels result from other activities such as public vehicle use and recreational activities. The most common avian responses to noise and human activity are avoidance or accommodation. Avoidance would result in displacement of individuals from an area larger than the actual disturbance area. Following avoidance of human activity and noise-producing areas during construction, certain avian species may acclimate to the activity and begin to return to areas that were formerly avoided.

Noise levels associated with construction may impact avian species that occupy habitats within the analysis area. Studies also demonstrate 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 population 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 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 avian species to be 47 dBA, while a New Mexico study in a pinyon-juniper woodland community found that impacts of gas well compressor noise on avian populations were greatest in areas where noise levels were above 50 dBA. However, moderate noise levels (40 to 50 dBA) also showed some effect on population densities in this study (LaGory et al. 2001).

For the purposes of this analysis, the total extent of indirect habitat loss as a result of the avian avoidance response is estimated to be the same as the construction noise attenuation distance. 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 Project and its alternatives are characterized by topographic variation and woody vegetation (e.g., shrubland, woodland, forest), this approach likely overestimates potential noise (indirect) impacts. Using this distance from the 250-foot-wide transmission line ROW and considering the potential for access road development, this analysis reports all acreages of habitat potentially indirectly impacted by noise and human activity. While actual locations of access roads are not yet known, this methodology accounts for areas with increased potential for being indirectly impacted by noise and human activity. It also counterbalances those acreages more distant from the 250-foot-wide transmission line ROW where the access roads would tie into existing roads. These impacts would occur most intensely in time and space during Project construction, but would be expected to continue at lower levels of intensity for the operational life of the Project (estimated at 50 years). Subsequent impact summary tables for each of the Project regions present these acreages of indirect impacts.

Proposed mitigation measures and design features would minimize the potential impacts related to human activity and noise during construction of the Project. TransWest would implement a mandatory employee biological education program for all construction personnel working on the Project (TWE-33). This would consist of all personnel involved in construction activities being notified of the occurrence of protected species or habitat in the construction area. Sensitive areas would be considered avoidance areas. Prior to any construction activity, avoidance areas would be marked on the ground and maintained through the duration of the contract. TransWest's design feature to implement seasonal timing restrictions in certain areas (TWE-32) would help avoid impacts to migratory birds during sensitive periods (e.g., nesting and breeding periods). Proposed mitigation measures, design features, and effectiveness are presented in Section 3.22.6, Impacts to Migratory Bird Species.

Decommissioning Impacts

The types of impacts to avian species and habitats during decommissioning of the Project would be similar to, but less intensive than construction impacts.

3.22.6.3 Region I

Key parameters that relate to the impact discussion in Section 3.22.6.2, Impacts to Migratory Birds Common to All Alternative Routes and Associated Components, and specific differences by alternative are discussed below.

Alternative I-A

Habitat Disturbance and Fragmentation

Alternative I-A would traverse approximately 156 miles of migratory bird potential habitat in Wyoming and Colorado. Approximately 49 miles (31 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.22-24**. Existing conditions within the Alternative I-A potential disturbance areas relative to migratory birds can be characterized as moderately disturbed and fragmented. Alternative I-A would parallel the I-80 corridor for approximately 40 miles from Rawlins to just south of Wamsutter, Wyoming, at which point it would turn south toward 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 471 miles of existing roads (3.02 acres of existing roads per mile of alternative) are located within the Alternative I-A potential disturbance areas, as presented in **Table 3.22-24**. This represents the second highest existing road density and habitat fragmentation within the potential disturbance areas among Region I alternatives.

Table 3.22-24 Region I Existing Conditions

Alternative	Total Length (miles)	Length of Non-co-located Construction[1] (miles)	Length of Co-located Construction (miles)	Existing Roads within Potential Disturbance Areas (miles)	Miles of Roads within Potential Disturbance Areas/Miles of Alternative
I-A	156	106	49	471	3.02
I-B	158	108	49	482	3.05
I-C	186	94	92	503	2.70
I-D	168	119	49	504	3.00

[1] Non-co-located construction refers to areas that are not co-located with existing aboveground utilities.

Table 3.22-25 provides a tabulation of impacts associated with the alternative routes in Region I.

Key Parameters Summary

Migratory Bird Habitat

Potential direct impacts to migratory bird habitat under Alternative I-A would include construction and operation impacts to approximately 2,029 acres and 451 acres, respectively, of potentially suitable breeding, roosting, foraging, and winter habitats. These areas represent 0.04 percent and 0.01 percent, respectively, of potentially suitable habitat within the Region I analysis area. Region I priority habitats were determined from the SWAPs and PIF Bird Conservation Plans for Colorado and Wyoming (CDOW 2006; Nicholoff 2003, PIF 2000; WGFD 2010). Region I priority habitats are denoted in **Table 3.22-25** with a footnote and include the grassland, greasewood flat, herbaceous wetland, open water, sagebrush shrubland, saltbush shrubland, and woody riparian and wetlands vegetation communities. Alternative I-A differentiating metrics for impacts to migratory bird habitat are presented in **Table 3.22-26**.

IBA and BHCA Habitats

Table 3.22-27 presents acreages of each priority habitat that are not co-located with existing aboveground utilities. Operational impacts such as long-term habitat fragmentation are anticipated to be reduced along co-located portions of an alternative as migratory bird habitat in these areas has already been fragmented by existing transmission lines. Priority habitats within IBAs and BHCAs in the Region I analysis area are presented in **Table 3.22-28**.

Potential direct impacts to IBAs under Alternative I-A would include construction and operation impacts to approximately 159 acres and 31 acres, respectively, of high quality avian habitats in the Powder Rim IBA. These areas represent 0.17 percent and 0.03 percent of Powder Rim IBA habitat within the Region I analysis area. Potential indirect impacts to the Powder Rim IBA under Alternative I-A would occur to 15,851 acres, which represent 17.31 percent of the Powder Rim IBA within the Region I analysis area (**Tables 3.22-25** and **3.22-29**).

Potential direct impacts to BHCAs under Alternative I-A would include construction and operation impacts to approximately 602 acres and 152 acres, respectively, of avian habitats with high conservation value. These areas represent 0.04 percent and 0.01 percent of BHCAs within the Region I analysis area. Potential indirect impacts to BHCAs under Alternative I-A would occur to 65,079 acres, which represent 3.91 percent of BHCAs in the Region I analysis area (**Tables 3.22-25** and **3.22-29**).

Table 3.22-26 presents the total potential impacts to priority habitats within IBAs and BHCAs that would occur under Alternative I-A. **Table 3.22-27** presents a summary of potential impacts to priority habitats within IBAs and BHCAs for this alternative. Also presented are acreages of each vegetation community that are co-located with existing aboveground utilities. Operational impacts such as long-term habitat fragmentation are anticipated to be reduced along co-located portions of an alternative as migratory bird habitat in these areas has already been fragmented by existing transmission lines.

Migratory Bird Species

Impacts to migratory bird species under Alternative I-A would vary in conjunction with the amount and type of habitat that is disturbed. **Table 3.22-25** presents a summary of Region I alternative route impact parameters for migratory bird species based on their breeding, foraging, and winter habitat associations. Included in this table is a summary of impacts to each vegetation community that provides habitat for migratory birds. In addition to habitat impacts, potential impacts to migratory bird species may occur as a result of collision. **Table 3.22-24** presents the length of Alternative I-A, which provides a measure of collision potential with the transmission line and associated structures. Also presented are the length and density of existing roads, which provide a measure of collision potential with vehicles and equipment. The density of existing roads within the Region I potential disturbance areas also is an indicator of current habitat fragmentation along each alternative route.

Raptors, particularly juveniles, and other large species are particularly susceptible to collision (APLIC 2012). The number of raptor nests in proximity to Project potential disturbance areas is one indicator of habitat quality and collision potential and can be compared among alternatives. A total of 278 known raptor nests occur within 1 mile of the potential disturbance areas under Alternative I-A (**Table 3.22-25**). This total is presented by species in **Table 3.22-30.**

A total of 58 BCC and PIF species potentially occur within the Region I analysis area (**Table 3.22-6**). These species were identified by the USFWS and Partners in Flight as species that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973. Each species designated has a unique set of habitat requirements, range of potential threats to its populations and habitat, and documented understanding of sensitivity to direct and indirect impacts from anthropogenic development. Therefore, this analysis makes no further attempt at characterizing these species with respect to differences in conservation priority. Of the 58 BCC and PIF species potentially inhabiting Region I, 39 species also are designated as Species of Greatest Conservation Need in Colorado or Wyoming (CDOW 2006, WGFD 2010).

Table 3.22-25 Region I Alternative Route Impact Parameters

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
Migratory Bird Species												
Migratory bird potential habitat (acres)[1]	2,029	451	219,187	2,056	461	229,000	2,407	535	257,586	2,157	468	235,037
Percentage of existing habitat within the Region I analysis area	0.04	0.01	4.34	0.04	0.01	4.40	0.05	0.01	5.10	0.04	0.01	4.66
Relative Collision Potential for Migratory Birds												
Length of transmission line (miles)[2]	156			158			186			168		
Raptor Nests[3]												
Number within 1 mile of the Region I potential disturbance areas[4]	278			303			470			323		
Bird Habitat Conservation Areas												
CO-21: Yampa River in Routt County BHCA (acres)	–	–	–	–	–	–	35	7	2,835	–	–	–
Percentage of existing CO-21: Yampa River in Routt County BHCA habitat within the Region I analysis area	–	–	–	–	–	–	<0.06	0.01	04.74	–	–	–
CO-28: Yampa River in Moffat County BHCA (acres)	19	6	2,134	19	6	2,134	254	55	23,284	19	6	2,134
Percentage of existing CO-28: Yampa River in Moffat County BHCA habitat within the Region I analysis area	0.02	0.01	1.78	0.02	0.01	1.78	0.21	0.05	19.44	0.02	0.01	1.78
CO-32: Routt and Moffat County Uplands BHCA (acres)	424	115	47,103	424	115	47,103	866	186	79,069	424	115	47,103
Percentage of existing CO-32: Routt and Moffat County Uplands BHCA habitat within the Region I analysis area	0.03	0.01	3.46	0.03	0.01	3.46	0.06	0.01	5.80	0.03	0.01	3.46
WY-38: Powder Rim BHCA (acres)	159	31	15,842	188	40	18,732	–	–	–	165	32	15,577
Percentage of existing WY-38: Powder Rim BHCA habitat within the Region I analysis area	0.17	0.03	17.31	0.21	0.04	20.47	–	–	–	0.18	0.03	17.03
WY-39: Little Snake River BHCA (acres)	–	–	–	–	–	–	48	11	4,649	–	–	–

Table 3.22-25 Region I Alternative Route Impact Parameters

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
Percentage of existing WY-39: Little Snake River BHCA habitat within the Region I analysis area	–	–	–	–	–	–	0.15	0.03	14.57	–	–	–
Audubon Important Bird Areas												
Powder Rim IBA (acres)	159	31	15,851	188	40	18,741	–	–	–	165	32	15,587
Percentage of Powder Rim IBA within the Region I analysis area	0.17	0.03	17.31	0.21	0.04	20.46	–	–	–	0.18	0.03	17.02
Muddy Creek Wetlands IBA (acres)	–	–	–	–	–	–	9	4	3,213	26	5	4,022
Percentage of Muddy Creek Wetlands IBA within the Region I analysis area	–	–	–	–	–	–	0.12	0.06	44.62	0.36	0.07	55.85
Migratory Bird Habitat Associations												
Agricultural Land	16	4	1,995	16	4	1,995	324	72	31,488	16	4	1,999
Percentage of existing habitat within the Region I analysis area	0.01	–	0.86	0.01	–	0.86	0.14	0.03	13.53	0.01	–	0.86
Barren/Sparsely Vegetated	9	2	1,063	9	2	1,103	2	1	318	5	1	726
Percentage of existing habitat within the Region I analysis area	0.03	0.01	3.20	0.03	0.01	3.32	0.01	–	0.96	0.02	–	2.18
Cliff and Canyon	18	4	2,103	20	5	2,128	5	1	562	10	2	1,316
Percentage of existing habitat within the Region I analysis area	0.06	0.01	7.16	0.07	0.02	7.24	0.02	–	1.91	0.03	0.01	4.48
Conifer Forest	1	<1.0	219	3	1	1,062	2	<1.0	286	2	1	1,059
Percentage of existing habitat within the Region I analysis area	<0.01	<0.01	0.61	0.01	<0.01	2.93	0.01	<0.01	0.79	0.01	<0.01	2.93
Dunes	14	3	1,991	14	3	1,991	<1	<1	49	1	1	170
Percentage of existing habitat within the Region I analysis area	0.02	–	2.85	0.02	–	2.85	<0.01	<0.01	0.07	<0.01	<0.01	0.24

Table 3.22-25 Region I Alternative Route Impact Parameters

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
Grassland[5]	115	31	12,429	115	31	12,420	179	43	20,200	115	31	12,400
Percentage of existing habitat within the Region I analysis area	0.05	0.01	5.88	0.05	0.01	5.88	0.08	0.02	9.56	0.05	0.01	5.87
Greasewood Flat[5]	28	6	4,042	29	7	4,124	35	9	4,680	35	8	4,263
Percentage of existing habitat within the Region I analysis area	0.03	0.01	4.37	0.03	0.01	4.46	0.04	0.01	5.06	0.04	0.01	4.61
Herbaceous Wetland[5]	20	4	2,003	20	4	2,006	9	2	1,533	29	5	2,783
Percentage of existing habitat within the Region I analysis area	0.07	0.01	7.29	0.07	0.01	7.30	0.03	0.01	5.58	0.11	0.02	10.13
Montane Grassland	<1	<1	1	<1	<1	1	<1	<1	4	<1	<1	1
Percentage of existing habitat within the Region I migratory bird analysis area	<0.01	<0.01	0.02	<0.01	<0.01	0.02	<0.01	<0.01	0.09	<0.01	<0.01	0.02
Montane Shrubland	<1	<1	1	<1	<1	1	2	1	633	<1	<1	1
Percentage of existing habitat within the Region I migratory bird analysis area	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.49	<0.01	<0.01	<0.01
Open Water[5]	3	1	609	3	1	609	4	1	661	3	1	650
Percentage of existing habitat within the Region I analysis area	0.02	0.01	4.86	0.02	0.01	4.86	0.03	0.01	5.28	0.02	0.01	5.19
Pinyon/Juniper Woodland	23	6	3,977	23	6	3,977	23	6	4,020	23	6	3,977
Percentage of existing habitat within the Region I analysis area	0.01	<0.01	1.08	0.01	<0.01	1.08	0.01	<0.01	1.09	0.01	<0.01	1.08
Sagebrush Shrubland[5]	1182	261	122,717	1218	269	124,553	1628	354	165,442	1376	296	143,399
Percentage of existing habitat within the Region I analysis area	0.04	0.01	4.28	0.04	0.01	4.35	0.06	0.01	5.78	0.05	0.01	5.01
Saltbush Shrubland[5]	584	126	64,617	568	125	64,549	174	41	24,521	527	110	60,734
Percentage of existing habitat within the Region I analysis area	0.07	0.02	8.07	0.07	0.02	8.06	0.02	0.01	3.06	0.07	0.01	7.58

Table 3.22-25 Region I Alternative Route Impact Parameters

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
Woody Riparian and Wetlands[5]	16	3	1,408	17	3	1,469	21	5	3,186	15	3	1,547
Percentage of existing habitat within the Region I analysis area	0.04	0.01	3.41	0.04	0.01	3.55	0.05	0.01	7.71	0.04	0.01	3.74

[1] All vegetation communities and land forms defined for the Project constitute migratory bird potential habitat except the developed/disturbed community. Although the developed/disturbed land cover type is not considered to be suitable avian habitat and is not included in analyses or reported disturbance acreages, some disturbance-tolerant species utilize these areas. Further discussion of these vegetation communities is included in Section 3.5.6, Impacts to Vegetation.

[2] Length refers to length of 600-kV transmission lines and provides a measure of avian collision potential.

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

[4] Nests of unknown raptor species are tabulated in both Sections 3.8 and 3.22 because they may have been utilized by either special status or non-special status raptor species.

[5] Region I priority habitats, as identified in the Colorado and Wyoming SWAPs and PIF Bird Conservation Plans.

Table 3.22-26 Alternative I-A Migratory Bird Habitat Analysis Parameters

Alternative I-A Differentiating Metrics	Total (acres)	Rank among Region I Alternatives Greatest Impact = 1 Least Impact = 4
Total Indirect Impacts to Priority Habitats	207,825	4
Total Indirect Impacts to Non-sagebrush Priority Habitats	85,108	2
Total Indirect Impacts to Wetland/Riparian/Open Water Priority Habitats	4,020	4
Total Indirect Impacts to Priority Habitats along Non-co-located Segments	188,209	3
Total Construction Impacts to Priority Habitats	1,948	4
Total Operation Impacts to Priority Habitats	432	4
Total Indirect Impacts to IBA Priority Habitats	14,822	3
Total Indirect Impacts to BHCA Priority Habitats	61,738	3
Total Length of Alternative	156 miles	4

Table 3.22-27 Alternative I-A Priority Habitat Analysis

Alternative I-A Priority Habitats	Construction Impacts to Priority Habitats (acres)	Operation Impacts to Priority Habitats (acres)	Indirect Impacts to Priority Habitats (acres)	Percentage of Existing Priority Habitats Indirectly Impacted within Region I Analysis Area	Indirect Impacts to IBA Priority Habitats (acres)	Indirect Impacts to BHCA Priority Habitats (acres)	Indirect Impacts to Priority Habitats along Non-co-located segments[1] (acres)	Percentage of Priority Habitats along Non-co-located Segments[1]
Grassland	115	31	12,429	5.9	9	5,117	11,170	90
Greasewood Flat	28	7	4,042	4.4	185	1,923	3,743	93
Herbaceous Wetland	20	4	2,003	7.3	1	5	1,837	92
Open Water	3	1	609	4.9	-	593	607	>99
Sagebrush Shrubland	1,182	261	122,717	4.3	8,599	37,108	108,243	88
Saltbush Shrubland	584	126	64,617	8.1	5,937	16,864	61,367	95
Woody Riparian and Wetlands	16	3	1,408	3.4	91	128	1,242	88
Total	**1,948**	**432**	**207,825**		**14,822**	**61,738**	**188,209**	

[1] Non-co-located construction refers to areas that are not co-located with existing aboveground utilities.

Table 3.22-28 Region I Priority Habitats within IBAs and BHCAs in the Region I Analysis Area

Priority Habitat	Powder Rim IBA (acres)	Muddy Creek Wetlands IBA (acres)	CO 21: Yampa River in Routt County BHCA (acres)	CO 28: Yampa River in Moffat County BHCA (acres)	CO 32: Routt and Moffat County Uplands BHCA (acres)	WY-38: Powder Rim BHCA (acres)	WY-39: Little Snake River BHCA (acres)
Grassland	420	<1	1,556	8,133	123,079	420	818
Greasewood Flat	922	499	28	4,970	10,771	920	443
Herbaceous Wetland	16	348	5	24	60	16	885
Open Water	1	8	425	5,561	2,715	1	7
Sagebrush Shrubland	60,467	2,738	21,496	44,110	912,260	60,403	15,568
Saltbush Shrubland	21,762	2,864	18	1,850	69,481	21,751	145
Woody Riparian and Wetlands	872	311	2,237	2,408	2,165	870	1,672
Total	**84,460**	**6,768**	**25,765**	**67,056**	**1,120,531**	**84,382**	**19,537**

Table 3.22-29 Region I Impacts to IBA and BHCA Habitats

IBA/BHCA	Alternative I-A (acres)			Alternative I-B (acres)			Alternative I-C (acres)			Alternative I-D (acres)		
	Construction	Operation	Indirect	Construction	Operation	Indirect	Construction	Operation	Indirect	Construction	Operation	Indirect
Powder Rim IBA	159	31	15,851	188	40	18,741	–	–	–	165	32	15,587
Muddy Creek Wetlands IBA	–	–	–	–	–	–	9	4	3,213	26	5	4,022
CO 21: Yampa River in Routt County BHCA	–	–	–	–	–	–	35	7	2,835	–	–	–
CO 28: Yampa River in Moffat County BHCA	19	6	2,134	19	6	2,134	254	55	23,284	19	6	2,134
CO 32: Routt and Moffat County Uplands BHCA	424	115	47,103	424	115	47,103	866	186	79,069	424	115	47,103
WY-38: Powder Rim BHCA	159	31	15,842	188	40	18,732	–	–	–	165	32	15,577
WY-39: Little Snake River BHCA	–	–	–	–	–	–	48	11	4,649	–	–	<1

Table 3.22-30 Region I Raptor Nests within 1 mile of Potential Disturbance Areas

Species	Alternative I-A	Alternative I-B	Alternative I-C	Alternative I-D	Tuttle Ranch Micro-siting Option 3	Tuttle Ranch Micro-siting Comparable Portion of Alternative I-D	Tuttle Ranch Micro-siting Option 4	Tuttle Ranch Micro-siting Comparable Portion of Alternative I-D
Bald Eagle	–	–	5	–	–	–	–	–
Northern Harrier	1	1	2	1	–	–	–	–
Cooper's Hawk	2	3	3	5	–	–	–	–
Northern Goshawk	1	1	–	1	–	–	–	–
Swainson's Hawk	1	1	5	1	–	–	–	–
Red-Tailed Hawk	9	11	26	16	–	–	–	–
Ferruginous Hawk	141	141	187	138	–	–	–	–
Golden Eagle	34	33	76	40	–	–	–	–
American Kestrel	3	4	9	3	–	–	–	–
Prairie Falcon	7	10	9	11	–	–	–	–
Great Horned Owl	–	–	6	3	–	–	–	–
Burrowing Owl	5	5	3	6	–	–	–	–
Common Raven	1	1	1	1	–	–	–	–
Unknown Raptor Species	73	92	138	97	–	–	–	–
Totals	**278**	**303**	**470**	**323**	**0**	**0**	**0**	**0**

Table 3.22-7 presents a tabulation of BCC and PIF species, their nesting, foraging, and winter habitat associations; and their potential for occurrence within each Region I vegetation community. For this analysis, the occurrence of priority habitats serves as an indicator of migratory bird, BCC, and PIF species usage and occurrence potential.

A total of 8 BCC and PIF species have high potential to occur within Region I priority habitats. These species have potential to occur in priority habitats present along all alternatives; thus a comparison between alternatives of this parameter is not possible. A total of 15 BCC and PIF species have moderate potential to occur within Region I priority habitats and a total of 35 BCC and PIF species have low potential to occur in Region I priority habitats. Among the BCC and PIF species that could occur in the habitats present in Region I, a total of 27 species are considered habitat obligates both of priority and non-priority vegetation communities. Two species that are included in this total are the black rosy-finch and brown-capped rosy-finch. These species have specific alpine habitat requirements that do not correspond entirely with the vegetation communities identified for the Project. Also included is the black swift, which has very specific nesting requirements that do not correspond entirely with the cliff and canyon habitat type. Habitat obligate species could be disproportionately impacted by disturbance their respective habitat types, particularly relative to breeding habitat.

It should be noted that the deciduous and conifer forest vegetation communities, as defined for the Project, are not considered to be priority habitats in Colorado or Wyoming. Nonetheless, 17 BCC and PIF species, including obligate species, nest, forage, and winter in forest habitats. In addition, cliff and

canyon habitats are not considered to be priority habitats in Region I; however, 7 BCC and PIF species require suitable cliff habitat for nesting, and thus would be considered obligates of this habitat type.

Impacts to migratory bird, BCC, and PIF species and habitats along Alternative I-A would be minimized with implementation of the following design features and mitigation measures.

- Applicable design features: TWE-1, TWE-2, TWE-4, TWE-13, TWE-14, TWE-16, TWE-26, TWE-27, TWE-28, TWE-29, TWE-30, TWE-31, TWE-32, TWE-33, TWE-34, and TWE-64; and
- Applicable mitigation measures: **WLF-1, WLF-2, WLF-3, WLF-4, WLF-5, WLF-6, WLF-7, WLF-8, WLF-9, WLF-10, REC-2, SSWS-1,** and **SSWS-13**.

Design features, proposed mitigation measures, and effectiveness statements are presented in Section 3.22.6, Impacts to Migratory Bird Species. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to migratory bird species and habitats would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during maintenance activities.

Alternative I-B

Habitat Disturbance and Fragmentation

Alternative I-B would traverse approximately 158 miles of potential migratory bird habitat in Wyoming and Colorado. Approximately 53 miles (34 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.22-24**. Existing conditions within the Alternative I-B potential disturbance areas relative to migratory birds can be characterized as moderately disturbed and fragmented. Alternative I-B would parallel the I-80 corridor for approximately 40 miles from Rawlins to just south of Wamsutter, Wyoming, at which point it would turn 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 482 miles of existing roads (3.05 miles of existing road per mile of alternative) are located within the Alternative I-B potential disturbance areas as presented in **Table 3.22-24**. This represents the highest existing road density and habitat fragmentation within the disturbance areas among Region I alternatives.

Key Parameters Summary

Migratory Bird Habitat

The types of impacts to migratory bird habitat under Alternative I-B are described in Section 3.22.6.2, Impacts Common to All Alternative Transmission Line Routes and Associated Components. Potential direct impacts to migratory bird habitat under Alternative I-B would include construction and operation impacts to 2,056 acres and 461 acres, respectively, of potentially suitable breeding, roosting, foraging, and winter habitats. These areas represent 0.04 percent and 0.01 percent of potentially suitable habitat within the Region I analysis area. Region I priority habitats are denoted in **Table 3.22-25** with a footnote and include the grassland, greasewood flat, herbaceous wetland, open water, sagebrush shrubland, saltbush shrubland, and woody riparian and wetlands vegetation communities. Alternative I-B differentiating metrics for impacts to migratory bird habitat are presented in **Table 3.22-31**.

Table 3.22-31 Alternative I-B Migratory Bird Habitat Analysis Parameters

Alternative I-B Differentiating Metrics	Total (acres)	Rank Among Region I Alternatives Greatest Impact = 1 Least Impact = 4
Total Indirect Impacts to Priority Habitats	209,730	3
Total Indirect Impacts to Non-sagebrush Priority Habitats	85,177	1
Total Indirect Impacts to Wetland/Riparian/Open Water Priority Habitats	4,084	3
Total Indirect Impacts to Priority Habitats along Non-co-located Segments	190,114	2
Total Construction Impacts to Priority Habitats	1,970	3
Total Operation Impacts to Priority Habitats	440	3
Total Indirect Impacts to IBA Priority Habitats	16,725	2
Total Indirect Impacts to BHCA Priority Habitats	63,641	2
Total Length of Alternative	158 miles	3

IBA and BHCA Habitats

The types of impacts to IBA and BHCA habitats under Alternative I-B would be the same as those described for Alternative I-A, but would differ in the amount and type of habitat disturbed. Potential direct impacts to IBAs under Alternative I-B would include construction and operation impacts to approximately 188 acres and 40 acres, respectively, of high quality avian habitats in the Powder Rim IBA. These areas represent 0.21 percent and 0.04 percent of the Powder Rim IBA within the Region I analysis area. Potential indirect impacts to the Powder Rim IBA under Alternative I-B would occur to 18,741 acres, which represent 20.46 percent of the Powder Rim IBA within the Region I analysis area (**Tables 3.22-25** and **3.22-29**).

Potential direct impacts to BHCAs under Alternative I-B would include construction and operation impacts to approximately 631 acres and 161 acres, respectively, of avian habitats with high conservation value. These areas represent 0.04 percent and 0.01 percent of BHCAs within the Region I analysis area. Potential indirect impacts to BHCAs under Alternative I-B would occur to 67,969 acres, which represent 4.08 percent of BHCAs within the Region I analysis area (**Tables 3.22-25** and **3.22-29**).

Table 3.22-31 presents the total potential impacts to priority habitats within IBAs and BHCAs that would occur under Alternative I-B. **Table 3.22-32** presents a summary of potential impacts to priority habitats within IBAs and BHCAs for this alternative. Also presented are acreages of each vegetation community that are co-located with existing aboveground utilities. Operational impacts such as long-term habitat fragmentation are anticipated to be reduced along co-located portions of an alternative as migratory bird habitat in these areas has already been fragmented by existing transmission lines.

Table 3.22-32 Alternative I-B Priority Habitat Analysis

Alternative I-B Priority Habitats	Construction Impacts to Priority Habitats (acres)	Operation Impacts to Priority Habitats (acres)	Indirect Impacts to Priority Habitats (acres)	Percentage of Existing Priority Habitats Indirectly Impacted within Region I Analysis Area	Indirect Impacts to IBA Priority Habitats (acres)	Indirect Impacts to BHCA Priority Habitats (acres)	Indirect Impacts to Priority Habitats Along Non-co-located Segments[1] (acres)	Percentage of Priority Habitats along Non-co-located Segments[1]
Grassland	115	31	12,420	5.9	<1	5,109	11,161	90
Greasewood Flat	29	7	4,124	4.5	266	2,004	3,825	93
Herbaceous Wetland	20	4	2,006	7.3	4	7	1,840	92
Open Water	3	1	609	4.9	–	593	607	100
Sagebrush Shrubland	1,218	269	124,553	4.3	10,434	38,943	110,079	88
Saltbush Shrubland	568	125	64,549	8.1	5,869	16,796	61,299	95
Woody Riparian and Wetlands	17	3	1,469	3.6	151	189	1,303	89
Total	**1,970**	**440**	**209,730**		**16,725**	**63,641**	**190,114**	

[1] Non-co-located construction refers to areas that are not co-located with existing aboveground utilities.

Priority habitats within IBAs and BHCAs in the Region I analysis area are presented in **Table 3.22-28**. **Table 3.22-31** presents the total potential impacts to those priority habitats within IBAs and BHCAs affected by Alternative I-B. Also presented are acreages of each vegetation community impacted along portions of the alternative that are co-located with existing aboveground utilities. Operational impacts such as long-term habitat fragmentation are anticipated to be reduced along co-located portions of an alternative as migratory bird habitat in these areas has already been fragmented by existing transmission lines.

Migratory Bird Species

Impacts to migratory bird species under Alternative I-B would vary in conjunction with the amount and type of habitat disturbed. **Table 3.22-24** presents the length of Alternative I-B, which provides a measure of collision potential with the transmission line and associated structures. Also presented are the length and density of existing roads, which provide a measure of collision potential with vehicles and equipment.

Raptors, particularly juveniles, and other large species are particularly susceptible to collision (APLIC 2012).The number of raptor nests in proximity to Project potential disturbance areas is one indicator of habitat quality and collision potential and can be compared among alternatives. A total of 303 known raptor nests occur within 1 mile of the potential disturbance areas under Alternative I-B (**Table 3.22-25**). This total is presented by species in **Table 3.22-30.**

Table 3.22-6 presents the BCC and PIF species that could breed, forage, or winter in the Region I analysis area and be impacted by the Project. **Table 3.22-31** presents a summary of avian analysis parameters along Alternative I-B. Design features and additional mitigation measures applicable to avoiding and minimizing impacts to migratory bird species and associated habitats are the same as those identified for Alternative I-A. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to migratory bird species and habitats would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during maintenance activities.

Alternative I-C

Habitat Disturbance and Fragmentation

Alternative I-C would traverse approximately 186 miles of migratory bird potential habitat in Wyoming and Colorado. Approximately 92 miles (49 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.22-24**. Existing conditions within the Alternative I-C disturbance areas relative to migratory birds can be characterized as moderately disturbed and fragmented. Alternative I-C would parallel the I-80 corridor for approximately 32 miles from Rawlins to just south of Creston Junction, Wyoming, at which point it would turn south along the SH-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 503 miles of existing roads (2.70 miles of existing roads per mile of alternative) are located within the Alternative I-C potential disturbance areas as presented in **Table 3.22-24**. This represents the lowest existing road density and habitat fragmentation within the disturbance areas among Region I alternatives.

Key Parameters Summary

Migratory Bird Habitat

The types of impacts to migratory bird species and associated habitats under Alternative I-C are described in Section 3.22.6.2, Impacts Common to All Alternative Transmission Line Routes and Associated Components. Potential impacts to migratory bird species and associated habitats under

Alternative I-C would result in construction and operation impacts to 2,407 acres and 535 acres, respectively, of potentially suitable breeding, roosting, foraging, and winter habitats. These areas represent 0.05 percent and 0.01 percent of potentially suitable habitat within the Region I analysis area. Region I priority habitats are denoted in **Table 3.22-25** with a footnote and include the grassland, greasewood flat, herbaceous wetland, open water, sagebrush shrubland, saltbush shrubland, and woody riparian and wetlands vegetation communities.

IBA and BHCA Habitats

The types of impacts to IBA and BHCA habitats under Alternative I-C would be the same as those described for Alternative I-A, but would differ in the amount and type of habitat disturbed. Potential direct impacts to IBAs under Alternative I-C would include construction and operation impacts to approximately 9 acres and 4 acres, respectively, of high quality avian habitats in the Muddy Creek Wetlands IBA. These areas represent 0.12 percent and .06 percent of the Muddy Creek Wetlands IBA within the Region I analysis area. Potential indirect impacts to the Muddy Creek Wetlands IBA under Alternative I-C would occur to 3,213 acres, which represent 44.62 percent of the Muddy Creek Wetlands IBA within the Region I analysis area (**Tables 3.22-25** and **3.22-29**).

Potential direct impacts to BHCAs under Alternative I-C would include construction and operation impacts to approximately 1,203 acres and 259 acres, respectively, of avian habitats with high conservation value. These areas represent 0.07 percent and 0.02 percent of BHCAs within the Region I analysis area. Potential indirect impacts to BHCAs under Alternative I-C would occur to 109,837 acres, which represent 6.6 percent of BHCAs within the Region I analysis area (**Tables 3.22-25** and **3.22-29**).

Table 3.22-33 presents the total potential impacts to those priority habitats within IBAs and BHCAs that would occur under Alternative I-C. **Table 3.22-34** presents a summary of potential impacts to priority habitats within IBAs and BHCAs for this alternative. Also presented are acreages of each vegetation community that are co-located with existing aboveground utilities. Operational impacts such as long-term habitat fragmentation are anticipated to be reduced along co-located portions of an alternative as migratory bird habitat in these areas has already been fragmented by existing transmission lines.

Table 3.22-33 Alternative I-C Migratory Bird Habitat Analysis Parameters

Alternative I-C Differentiating Metrics	Total (acres)	Rank Among Region I Alternatives Greatest Impact = 1 Least Impact = 4
Total Indirect Impacts to Priority Habitats	220,223	2
Total Indirect Impacts to Non-sagebrush Priority Habitats	54,781	4
Total Indirect Impacts to Wetland/Riparian/Open Water Priority Habitats	5,380	1
Total Indirect Impacts to Priority Habitats along Non-co-located Segments	188,183	4
Total Construction Impacts to Priority Habitats	2,049	2
Total Operation Impacts to Priority Habitats	455	1
Total Indirect Impacts to IBA Priority Habitats	2,859	4
Total Indirect Impacts to BHCA Priority Habitats	75,475	1
Total Length of Alternative	186 miles	1

Table 3.22-34 Alternative I-C Priority Habitat Analysis

Alternative I-C Priority Habitats	Construction Impacts to Priority Habitats (acres)	Operation Impacts to Priority Habitats (acres)	Indirect Impacts to Priority Habitats (acres)	Percentage of Existing Priority Habitats Indirectly Impacted within Region I Analysis Area	Indirect Impacts to IBA Priority Habitats (acres)	Indirect Impacts to BHCA Priority Habitats (acres)	Indirect Impacts to Priority Habitats along Non-co-located segments[1] (acres)	Percentage of Priority Habitats along Non-co-located Segments[1]
Grassland	179	43	20,200	9.6	<1	10,541	16,245	80
Greasewood Flat	35	9	4,680	5.1	299	947	4,133	88
Herbaceous Wetland	9	2	1,533	5.6	236	247	1,367	89
Open Water	4	1	661	5.3	3	624	498	75
Sagebrush Shrubland	1,628	354	165,442	5.8	1,315	61,337	141,404	86
Saltbush Shrubland	174	41	24,521	3.1	742	330	21,563	88
Woody Riparian and Wetlands	21	5	3,186	7.7	265	1,449	2,973	93
Total	**2,049**	**455**	**220,223**		**2,859**	**75,475**	**188,183**	

[1] Non-co-located construction refers to areas that are not co-located with existing aboveground utilities.

Migratory Bird Species

Impacts to migratory bird species under Alternative I-C would vary in conjunction with the amount and type of habitat disturbed. **Table 3.22-24** presents the length of Alternative I-C, which provides a measure of collision potential with the transmission line and associated structures. Also presented are the length and density of existing roads, which provide a measure of collision potential with vehicles and equipment.

Raptors, particularly juveniles, and other large species are particularly susceptible to collision (APLIC 2012).The number of raptor nests in proximity to Project potential disturbance areas is one indicator of habitat quality and collision potential and can be compared among alternatives. A total of 470 known raptor nests occur within 1 mile of the potential disturbance areas along Alternative I-C (**Table 3.22-25**). This total is presented by species in **Table 3.22-30**.

Table 3.22-6 presents the BCC and PIF species that could breed, forage, or winter in the Region I analysis area and be impacted by the Project. **Table 3.22-33** presents a summary of Avian Analysis Parameters along Alternative I-C. Design features and additional mitigation measures applicable to avoiding and minimizing impacts to migratory bird species and associated habitats are the same as those identified for Alternative I-A. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to migratory bird species and habitats would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during maintenance activities.

Alternative I-D

Habitat Disturbance and Fragmentation

Alternative I-D would traverse approximately 168 miles of habitat in Wyoming and Colorado. Approximately 49 miles (29 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.22-24**. Existing conditions within the Alternative I-D potential disturbance areas relative to migratory birds can be characterized as moderately disturbed and fragmented. Alternative I-D would parallel the I-80 corridor for approximately 40 miles from Rawlins to just south of Wamsutter, Wyoming, at which point it would turn south toward 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 504 miles of existing roads (3.0 miles of existing roads per mile of alternative) are located within the Alternative I-D potential disturbance areas as presented in **Table 3.22-24**. This represents the third highest existing road density and habitat fragmentation within the potential disturbance areas among Region I alternatives.

Key Parameters Summary

Migratory Bird Habitat

The types of impacts to migratory bird species and associated habitats under Alternative I-D are described in Section 3.22.6.2, Impacts Common to All Alternative Transmission Line Routes and Associated Components. Potential impacts to migratory bird species and associated habitats under Alternative I-D would result in construction and operation impacts to 2,157 acres and 468 acres, respectively, of potentially suitable breeding, roosting, foraging, and winter habitats. These areas represent 0.04 percent and 0.01 percent of potentially suitable habitat within the Region I analysis area. Region I priority habitats are denoted in **Table 3.22-25** with a footnote and include the grassland, greasewood flat, herbaceous wetland, open water, sagebrush shrubland, saltbush shrubland, and woody riparian and wetlands vegetation communities.

IBA and BHCA Habitats

The types of impacts to IBA and BHCA habitats under Alternative I-D would be the same as those described for Alternative I-A, but would differ in the amount and type of habitat disturbed. Potential direct impacts to IBAs under Alternative I-D would include construction and operation impacts to approximately 191 acres and 37 acres, respectively, of high quality avian habitats in the Powder Rim and Muddy Creek Wetlands IBAs. These areas represent 0.19 percent and 0.04 percent of IBAs within the Region I analysis area. Potential indirect impacts to IBAs under Alternative I-D would occur to 19,609 acres, which represent 19.85 percent of IBAs within the Region I analysis area.

Potential direct impacts to BHCAs under Alternative I-D would include construction and operation impacts to approximately 608 acres and 153 acres, respectively, of high priority avian habitats. These areas represent 0.04 percent and 0.01 percent of BHCAs within the Region I analysis area (**Tables 3.22-25** and **3.22-29**). Potential indirect impacts to BHCAs under Alternative I-D would occur to 64,814 acres, which represent 3.89 percent of IBAs within the Region I analysis area.

Table 3.22-35 presents the total potential impacts to priority habitats within IBAs and BHCAs that would occur under Alternative I-D. **Table 3.22-36** presents a summary of potential impacts to priority habitats within IBAs and BHCAs for this alternative. Also presented are acreages of each vegetation community that are co-located with existing aboveground utilities. Operational impacts such as long-term habitat fragmentation are anticipated to be reduced along co-located portions of an alternative as migratory bird habitat in these areas has already been fragmented by existing transmission lines.

Migratory Bird Species

Impacts to migratory bird species under Alternative I-D would vary in conjunction with the amount and type of habitat disturbed. **Table 3.22-24** presents the length of Alternative I-D, which provides a measure of collision potential with the transmission line and associated structures. Also presented are the length and density of existing roads, which provide a measure of collision potential with vehicles and equipment. Raptor species are particularly susceptible to collision risk. The density of existing roads within the Region I potential disturbance areas also is an indicator of current habitat fragmentation along each alternative route.

Raptors, particularly juveniles, and other large species are particularly susceptible to collision (APLIC 2012).The number of raptor nests in proximity to Project potential disturbance areas is one indicator of habitat quality and collision potential and can be compared among alternatives. A total of 323 known raptor nests occur within 1 mile of the potential disturbance areas under Alternative I-D (**Table 3.22-25**).

Table 3.22-6 presents the BCC and PIF species that could breed, forage, or winter in the Region I analysis area and be impacted by the Project. **Table 3.22-35** presents a summary of Avian Analysis Parameters along Alternative I-D. Design features and additional mitigation measures applicable to avoiding and minimizing impacts to migratory bird species and associated habitats are the same as those identified for Alternative I-A. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to migratory bird species and habitats would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during maintenance activities.

Table 3.22-35 Alternative I-D Migratory Bird Habitat Analysis Parameters

Alternative I-D Differentiating Metrics	Total (acres)	Rank Among Region I Alternatives Greatest Impact = 1 Least Impact = 4
Total Indirect Impacts to Priority Habitats	225,776	1
Total Indirect Impacts to Non-sagebrush Priority Habitats	82,377	3
Total Indirect Impacts to Wetland/Riparian/Open Water Priority Habitats	4,980	2
Total Indirect Impacts to Priority Habitats along Non-co-located Segments	206,160	1
Total Construction Impacts to Priority Habitats	2,100	1
Total Operation Impacts to Priority Habitats	454	2
Total Indirect Impacts to IBA Priority Habitats	17,701	1
Total Indirect Impacts to BHCA Priority Habitats	60,671	4
Total Length of Alternative	168 miles	2

Table 3.22-36 Alternative I-D Priority Habitat Analysis

Alternative I-D Priority Habitats	Construction Impacts to Priority Habitats (acres)	Operation Impacts to Priority Habitats (acres)	Indirect Impacts to Priority Habitats (acres)	Percentage of Existing Priority Habitats Indirectly Impacted within Region I Analysis Area	Indirect Impacts to IBA Priority Habitats (acres)	Indirect Impacts to BHCA Priority Habitats (acres)	Indirect Impacts to Priority Habitats along Non-co-located Segments[1] (acres)	Percentage of Priority Habitats along Non-co-located Segments[1]
Grassland	115	31	12,400	5.9	<1	5,109	11,141	90
Greasewood Flat	35	8	4,263	4.6	419	1,990	3,963	93
Herbaceous Wetland	29	5	2,783	10.1	143	6	2,617	94
Open Water	3	1	650	5.2	8	593	648	>99
Sagebrush Shrubland	1,376	296	143,399	5.0	11,396	38,394	128,926	90
Saltbush Shrubland	527	110	60,734	7.6	5,549	14,414	57,484	95
Woody Riparian and Wetlands	15	3	1,547	3.7	187	165	1,381	89
Total	**2,100**	**454**	**225,776**		**17,701**	**60,671**	**206,160**	

[1] Non-co-located construction refers to areas that are not co-located with existing aboveground utilities.

Tuttle Ranch Micro-siting Options

TransWest has developed two potential options to avoid or minimize the crossing of the Tuttle Conservation Easement along Alternative I-D by routing the alternative across the NPS Deerlodge Road. These options are referred to as Tuttle Ranch Micro-siting Options 3 and 4. 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 a large 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. Micro-siting Options 3 and 4 would avoid impacts to active white-tailed prairie dog colonies.

Compared to Alternative I-D, potential impacts to local avian populations resulting from these micro-siting options are anticipated to be minor in terms of the amount of habitat directly impacted. Potential impacts to migratory birds and associated habitats are described in Section 3.22.6.2, Impacts Common to All Alternative Transmission Line Routes and Associated Components. The substantive difference between the micro-siting options and Alternative I-D involves the level of habitat fragmentation resulting from construction and other long-term impact factors. The NPS is responsible for protection of wildlife resources on NPS-managed lands (NPS 2006). Micro-siting Options 3 and 4 would avoid crossing the conservation easement, but would result in increased long-term habitat fragmentation within the NPS Deerlodge Road area. Currently, no overhead transmission lines exist on NPS-administered land in this area.

Alternative Connectors in Region I

No alternative connectors have been identified in Region I.

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 of this system has not been determined, conceptual locations and connections to the alternative routes have been provided by TransWest.

The types of impacts associated with constructing and operating this system would be similar to those discussed in Section 3.22.6.2, Impacts Common to All Alternative Transmission Line Routes and Associated Components. Compared to impacts associated with alternative routes, impacts associated with construction and operation of the ground electrode systems would 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 migratory bird, BCC, and PIF breeding, foraging, and winter habitats would include those resulting from construction of the ground electrode site and access roads. Indirect impacts to migratory birds, BCC, and PIF species and their habitats would include disturbance from operation activities and habitat fragmentation resulting from access road construction and the construction and operation of the low voltage overhead line.

The ground electrode overhead line would be similar to a modified 34.5-kV distribution transmission line as discussed in Section 2.4.3. This low-voltage electrode line is not expected to pose an electrocution hazard for migratory birds due to the 6-foot spacing of the conductors and the infrequency with which they would be charged (approximately 30 hours/year). Also, the Project would 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), further reducing the electrocution hazard associated with this facility. **Table 3.22-37** summarizes impacts associated with the seven combinations of alternative route and siting possibilities for the northern ground electrode system. **Table 3.22-38** presents known raptor nests within 1 mile of each ground electrode system siting location.

Table 3.22-37 Region I Ground Electrode System Impact Parameters

Ground Electrode System Siting Location Alternatives[1]	Analysis
Separation Flat – All Alternative Routes	Approximately 12 miles of low-voltage electrode bed interconnection lines[2]. Approximately 120 acres of construction, 35 acres of operation, and 9,328 acres of indirect impacts to potential migratory bird habitat would occur. No construction or operation impacts to BHCAs or IBAs would occur. Six raptor nests for species that are not further classified as special status are within 1 mile of the potential disturbance areas.[3,4] – No direct or indirect impacts to agricultural land habitat would occur. – No direct or indirect impacts to aspen forest and woodland habitat would occur. – No direct or indirect impacts to barren/sparsely vegetated habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 8 acres of indirect impacts to cliff and canyon habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 1 acre of indirect impacts to conifer forest habitat would occur. – No direct or indirect impacts to desert shrubland habitat would occur. – No direct or indirect impacts to dune habitat would occur. – No direct or indirect impacts to ephemeral wash habitat would occur. – No direct or indirect impacts to grassland habitat would occur. – Approximately 3 acres of construction, 1 acre of operation, and 249 acres of indirect impacts to greasewood flat habitat would occur. – Approximately 5 acres of construction, 1 acre of operation, and 410 acres of indirect impacts to herbaceous wetland habitat would occur. – No direct or indirect impacts to montane grassland habitat would occur. – No direct or indirect impacts to montane shrubland habitat would occur. – No direct or indirect impacts to open water habitat would occur. No direct or indirect impacts to pinion-juniper woodland habitat would occur. – Approximately 8 acres of construction, 2 acres of operation, and 708 acres of indirect impacts to sagebrush shrubland habitat would occur. – Approximately 103 acres of construction, 30 acres of operation, and 8,612 acres of indirect impacts to saltbush shrubland habitat would occur. – Approximately 1 acre of construction, no acres of operation, and 52 acres of indirect impacts to woody riparian and wetlands habitat would occur.
Bolten Ranch – All Alternative Routes	Approximately 15 miles of low-voltage electrode bed interconnection line[2]. Approximately 150 acres of construction, 52 acres of operation, and 2,559 acres of indirect impacts to potential migratory bird habitat would occur. No construction or operation impacts to BHCAs or IBAs would occur. Eight raptor nests for species that are not further classified as special status are within 1 mile of the potential disturbance areas.[3,4] – No direct or indirect impacts to agricultural land habitat would occur. – No direct or indirect impacts to aspen forest and woodland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 1 acre of indirect impacts to barren/sparsely vegetated habitat would occur. – No direct or indirect impacts to cliff and canyon habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 1 acre of indirect impacts to conifer forest habitat would occur. – No direct or indirect impacts to desert shrubland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 3 acres of indirect impacts to dune habitat would occur. – No direct or indirect impacts to ephemeral wash habitat would occur. – No direct or indirect impacts to grassland habitat would occur. – Approximately 7 acres of construction, 3 acres of operation, and 125 acres of indirect impacts to greasewood flat habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 1 acre of indirect impacts to herbaceous wetland habitat would occur. – No direct or indirect impacts to montane grassland habitat would occur. – No direct or indirect impacts to montane shrubland habitat would occur.

Table 3.22-37 Region I Ground Electrode System Impact Parameters

Ground Electrode System Siting Location Alternatives[1]	Analysis
	– No direct or indirect impacts to open water habitat would occur. – No direct or indirect impacts to pinyon- juniper woodland habitat would occur. – Approximately 65 acres of construction, 22 acres of operation, and 1,110 acres of indirect impacts to sagebrush shrubland habitat would occur. – Approximately 76 acres of construction, 26 acres of operation, and 1,296 acres of indirect impacts to saltbush shrubland habitat would occur. – Approximately 1 acre of construction, <1 acre of operation, and 22 acres of indirect impacts to woody riparian and wetlands habitat would occur.
Eight Mile Basin – All Alternative Routes	Approximately 5 miles of low-voltage electrode bed interconnection lines[2]. Approximately 86 acres of construction, 17 acres of operation, and 4,485 acres if indirect impacts to potential migratory bird habitat would occur. No construction or operation impacts to BHCAs or IBAs would occur. Two known raptor nests for species that are not further classified as special status are within 1 mile of the potential disturbance areas.[3,4] – Approximately <1 acre of construction, <1 acre of operation, and 8 acres of indirect impacts to agricultural land habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 4 acres of indirect impacts to aspen forest and woodland habitat would occur. – Approximately 1 acre of construction, <1 acre of operation, and 51 acres of indirect impacts to barren/sparsely vegetated habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and <1 acre of indirect impacts to cliff and canyon habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 14 acres of indirect impacts to conifer forest habitat would occur. – No direct or indirect impacts to desert shrubland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 11 acres of indirect impacts to dune habitat would occur. – No direct or indirect impacts to ephemeral wash habitat would occur. – Approximately 3 acres of construction, <1 acre of operation, and 133 acres of indirect impacts to grassland habitat would occur. – Approximately 1 acre of construction, <1 acre of operation, and 32 acres of indirect impacts to greasewood flat habitat would occur. – Approximately 2 acres of construction, <1 acre of operation, and 131 acres of indirect impacts to herbaceous wetland habitat would occur. – No direct or indirect impacts to montane grassland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 2 acres of indirect impacts to montane shrubland habitat would occur. – Approximately 2 acres of construction, <1 acre of operation, and 119 acres of indirect impacts to open water habitat would occur. – No direct or indirect impacts to pinion-juniper woodland habitat would occur. – Approximately 65 acres of construction, 13 acres of operation, and 3,404 acres of indirect impacts to sagebrush shrubland habitat would occur. – Approximately 11 acres of construction, 2 acres of operation, and 569 acres of indirect impacts to saltbush shrubland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 9 acres of indirect impacts to woody riparian and wetlands habitat would occur.
Separation Creek – All Alternative Routes	Approximately 2 miles of low-voltage electrode bed interconnection lines[2]. Approximately 74 acres of construction, 11 acres of operation, and 9,328 acres of indirect impacts to potential migratory bird habitat would occur. No construction or operation impacts to BHCAs or IBAs would occur. Eighteen known raptor nests for species that are not further classified as special status are within 1 mile of the potential disturbance areas.[3,4] – Approximately <1 acre of construction, <1 acre of operation, and 1 acre of indirect impacts to agricultural land habitat would occur. – No direct or indirect impacts to aspen forest and woodland habitat would occur.

Table 3.22-37 Region I Ground Electrode System Impact Parameters

Ground Electrode System Siting Location Alternatives[1]	Analysis
	– Approximately <1 acre of construction, <1 acre of operation, and 2 acres of indirect impacts to barren/sparsely vegetated habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 10 acres of indirect impacts to cliff and canyon habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 10 acres of indirect impacts to conifer forest habitat would occur. – No direct or indirect impacts to desert shrubland habitat would occur. – No direct or indirect impacts to ephemeral wash habitat would occur. – No direct or indirect impacts to dune habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 118 acres of indirect impacts to grassland habitat would occur. – Approximately 1 acre of construction, <1 acre of operation, and 162 acres of indirect impacts to greasewood flat habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and <1 acre of indirect impacts to herbaceous wetland habitat would occur. – No direct or indirect impacts to montane grassland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 1 acre of indirect impacts to montane shrubland habitat would occur. – No direct or indirect impacts to open water habitat would occur. – No direct or indirect impacts to pinion-juniper woodland habitat would occur. – Approximately 71 acres of construction, 10 acres of operation, and 8,898 acres of indirect impacts to sagebrush shrubland habitat would occur. – Approximately 1 acre of construction, <1 acre of operation, and 179 acres of indirect impacts to saltbush shrubland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 48 acres of indirect impacts to woody riparian and wetlands 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 low voltage electrode bed interconnection lines and provides a measure of avian collision potential.

3 Special status raptor species are presented in Section 3.8, Special Status Wildlife Species.

4 Nests of unknown raptor species are tabulated in both Sections 3.8 and 3.22 because they may have been utilized by either special status or non-special status raptor species.

Table 3.22-38 Raptor Nests within 1 mile of the Ground Electrode System Potential Siting Areas[1]

Alternative Ground Electrode System Potential Siting Areas	Raptor Nests[2,3,4]
Separation Flats – All Alternative Routes	2 American kestrel, 1 red-tailed hawk, 3 unknown raptor species nests
Bolten Ranch – All Alternative Routes	1 American kestrel, 8 red-tailed hawk, 3 unknown raptor species nests
Eight Mile Basin – All Alternative Routes	2 red-tailed hawk nests
Separation Creek – All Alternative Routes	4 American kestrel, 1 great-horned owl, 1 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 Species.

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

4 Nests of unknown raptor species are tabulated in both Sections 3.3 and 3.22 because they may have been utilized by either special status raptors or non-special status raptors.

Region I Conclusion

Based on a comparison of impact parameters for Region I alternatives, potential direct and indirect impacts to migratory bird species and habitats would be greatest for Alternative I-D, as presented in **Table 3.22-39**. In order of priority, potential impacts under Region I alternatives would be greatest under Alternative I-D, followed by Alternatives I-C and I-B. Alternative I-A would result in the least impact to migratory birds and habitats according to the established metrics. Alternative I-C would result in the greatest impact and Alternative I-A would result in the least impact to known raptor nests. Alternative I-D would result in the greatest construction and operation impacts to Audubon IBA habitats, followed by Alternatives I-B and I-A. Alternative I-C would result in the fewest construction and operation impacts to Audubon IBA habitats. Alternative I-C would result in the greatest construction and operation impacts to BHCA habitats, followed by Alternatives I-B and I-D. Alternative I-A would result in the least construction and operation impacts to BHCA habitats (**Table 3.22-25**). Alternative I-C would result in the highest potential construction disturbance to riparian areas near perennial streams as discussed in Section 3.9, Aquatic Biological Resources, and presented in **Table 3.9-8**. Project impacts on migratory bird, BCC, and PIF species and associated habitats would be avoided or considered to be low in magnitude and short-term in duration after implementing BMPs, design features, and additional mitigation measures (Section 3.22.6 and **Appendix C**).

Table 3.22-39 Region I Composite Metric Rank Scores

Metric Rank Greatest Impact = 1; Least Impact = 4	Alternative I-A	Alternative I-B	Alternative I-C	Alternative I-D
Total Indirect Impacts to Priority Habitats	4	3	2	1
Total Indirect Impacts to Non-sagebrush Priority Habitats	2	1	4	3
Total Indirect Impacts to Wetland/Riparian/Open Water Priority Habitats	4	3	1	2
Total Indirect Impacts to Priority Habitats along Non-co-located segments	3	2	4	1
Total Construction Impacts to Priority Habitats	4	3	2	1
Total Operation Impacts to Priority Habitats	4	3	1	2
Total Indirect Impacts to IBA Priority Habitats	3	2	4	1
Total Indirect Impacts to BHCA Priority Habitats	3	2	1	4
Total Length of Alternative	4	3	1	2
Composite Score	31	22	20	17

A total of 8 BCC and PIF species have high potential to occur within Region I priority habitats. These species have potential to occur in priority habitats present along all alternatives; thus a comparison between alternatives of this parameter is not possible. A total of 15 BCC and PIF species have moderate potential to occur within Region I priority habitats and a total of 35 BCC and PIF species have low potential to occur in Region I priority habitats. Among the BCC and PIF species that could occur in the habitats present in Region I, a total of 29 species are considered habitat obligates both of priority and non-priority vegetation communities. These species could be disproportionately impacted by disturbance in the following habitat types, particularly relative to nesting habitat.

- Cliff and canyon: peregrine falcon, golden eagle, ferruginous hawk, prairie falcon, black swift, and white-throated swift;
- Grassland Habitat Obligate Species: long-billed curlew, mountain plover, upland sandpiper, grasshopper sparrow, chestnut-collared longspur;
- Greasewood Flat Habitat Obligate Species: none;

- Open Water, Herbaceous Wetland, Woody Riparian and Wetlands Habitat Obligate Species: eared grebe, least bittern, bald eagle, long-billed curlew, willow flycatcher, veery, yellow warbler, Lincoln's sparrow, and yellow-headed blackbird;
- Sagebrush Shrubland Habitat Obligate Species: sage thrasher, sage sparrow, Brewer's sparrow;
- Saltbush Shrubland Habitat Obligate Species: None; and
- Conifer and deciduous forest: Dusky grouse, flammulated owl, Lewis's woodpecker, Williamson's sapsucker, red-naped sapsucker, olive-sided flycatcher, gray jay, Steller's jay, Clark's nutcracker, Bohemian waxwing, pine grosbeak, white-winged crossbill.

Specific criteria and rationale for the designation of IBAs and BHCAs is discussed in Section 3.22.4.1. Audubon IBAs and BHCAs serve as additional indicators of priority avian habitats across Project alternatives. **Table 3.22-25** presents impacts to the Powder Rim and Muddy Creek Wetlands IBAs and five BHCAs, by alternative. The Powder Rim IBA would be traversed by Alternatives I-A, I-B, and I-D, resulting in disturbance acreages as presented in **Table 3.22-25.** The Muddy Creek Wetlands IBA would be traversed by Alternatives I-C and I-D, resulting in disturbance acreages as presented in **Table 3.22-25.** BHCA habitat would be traversed by all Region I alternative routes, as presented in **Table 3.22-25**. **Table 3.22-39** provides a summary of the acreages of priority habitats existing in the IBAs and BHCAs within Region I potential disturbance areas.

Impacts from the Project to migratory birds would be expected to result primarily from habitat loss, alteration, and fragmentation. Although avian species' reactions to habitat fragmentation vary by species and habitat affected, as discussed in Section 3.22.6.2, Impacts Common to All Alternative Transmission Line Routes and Associated Components**,** fragmentation of habitat resulting from the construction and operation of the transmission line is considered one of the primary impacts to migratory birds within the analysis area. The effects of habitat fragmentation can be especially detrimental to certain species with life histories that require large areas of undisturbed land. Most BCC and PIF species that occur in Region I are likely to be adversely affected by increased habitat fragmentation.

Conversely, native and introduced species that prefer open and edge habitats (ecotones) could benefit from increased fragmentation from construction and operation of the Project in an otherwise contiguous landscape. Habitat fragmentation and human disturbance contribute to the proliferation of species that pose significant threats to many native species, such as the brown-headed cowbird and European starling. The brown-headed cowbird is an avian parasite that lays its eggs in the nests of host species. Region I BCC and PIF species that are especially impacted by nest parasitism include the willow flycatcher and yellow warbler. The European starling is an introduced species that poses a threat to native cavity-nesting species by dominating potential nest sites. Region I BCC and PIF species that are potentially impacted by European starlings include the flammulated owl, Lewis's woodpecker, Williamson's sapsucker, red-naped sapsucker, and mountain bluebird.

Some segments of the Project are proposed to be co-located with existing aboveground utilities. These areas are already impacted by habitat fragmentation and are considered when comparing Project alternatives. Co-location also is important when considering the potential for newly constructed roads as areas of proposed co-location are likely to require construction of fewer access roads that would further fragment migratory bird habitats. Regardless of co-location, fragmentation of non-forested habitats would be minimized because no cover type conversion would be required and access to Project infrastructure would typically be by overland travel rather than on bladed access roads.

Alternative I-C would result in the fewest miles of newly fragmented habitat as it is co-located with other existing aboveground utilities for approximately 50 percent of its proposed alignment (**Table 3.22-24**). Alternative I-A would result in the fewest acres of newly fragmented priority habitats (**Table 3.22-26**)

Potential for avian mortality resulting from collisions with the proposed power lines and associated infrastructure is discussed in Section 3.22.6.2. The length of the proposed transmission line serves as a basic indicator of avian collision potential between Project alternatives, as a longer line provides greater opportunity for collision. To further identify potential differences between Project alternatives, it is therefore helpful to consider the aggregate length of the various alternatives across priority habitats as these habitats are likely to have increased species diversity and population densities in comparison with non-priority habitats. In Region I, Alternative I-C would have the longest length in comparison to other Project alternatives. Therefore, it can be concluded that Alternative I-C would pose the greatest collision risk to avian species relative to other Project alternatives.

Implementation of TWE-30, **WLF-5**, **WLF-7**, **WLF-8**, **WLF-9**, **WLF-10**, and **REC-2** would minimize collision potential for migratory bird species. Implementation of **WLF-4** would minimize collision impacts to night migrants, which could be attracted by lighting at Project components. Transmission towers would not be lighted, but dark-sky lighting would be employed at all terminals, sub-stations, and series compensation facilities. This lighting system is fully shielded to keep light from extending above the horizontal plane and is designed to provide the minimum amount of illumination necessary for safety and security purposes. Potential contributions from the Project to climate change are discussed in Section 3.1, Climate and Air Quality. Preconstruction nest surveys would be conducted and the Project would restrict construction and maintenance activities in the vicinity of an active nest according to the appropriate seasonal and spatial buffers determined in coordination with applicable agencies.

Potential impacts by the Project to select BCC and PIF species in Region I are discussed below. Design features and additional mitigation measures applicable to avoiding and minimizing impacts to migratory bird species and associated habitats are the same as those identified for Alternative I-A. Design features and mitigation measures are presented in Section 3.22.6 and are included in **Appendix C**. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to migratory bird species and habitats would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during maintenance activities.

Notable Species-Specific Conclusions

Several BCC and/or PIF species were selected for additional analysis as examples from each priority habitat present in the Region I analysis area. Factors considered in this selection include whether the species is an obligate of the priority habitat, its potential for occurrence in the Region I analysis area, its state or federal status, and whether the species' geographic range is limited to the Region I analysis area rather than inclusive of other Project regions.

Grassland Species

A variety of migratory bird species utilizes grassland habitat in Region I, including 17 BCC and PIF species. The grasshopper sparrow and chestnut-collared longspur were selected as examples for this priority habitat in Region I.

Grasshopper Sparrow

The grasshopper sparrow is a migratory species and could occur in the Region I analysis area during the breeding season. The species is designated as BLM sensitive in Utah, a Wyoming SGCN-Tier II, a Utah SGCN-Tier II, a BCC, and a PIF Species of Conservation Importance. The grasshopper sparrow has moderate potential to breed and forage in suitable habitat in the Region I analysis area.

The grasshopper sparrow is an obligate of grassland habitat and prefers large, unfragmented tracts of habitat. Many populations are in decline due to habitat loss, alteration, and fragmentation. Brown-headed cowbird nest parasitism also is a threat (Vickery 1996). Brown-headed cowbird populations would be expected to proliferate with an increase in habitat fragmentation and the associated creation of edge habitat (Lowther 1993). In addition, the cowbird utilizes tall shrubs, fences, and power lines as vantage points from which to observe nesting birds in order to deposit eggs (Johnson et al. 2002). Proximity to

humans increases the likelihood of secondary predation by domestic and feral cats. Pesticide contamination and the invasion of exotic annual plants, especially cheatgrass, also are threats.

Chestnut-collared Longspur

The chestnut-collared longspur is a migratory species and could occur in the Region I analysis area during the breeding season. The species is designated as a Colorado SGCN, a Wyoming SGCN-Tier II, and a BCC. The chestnut-collared longspur is considered to be a climate endangered species according to the Audubon Birds and Climate Change Report (National Audubon Society 2014) and may lose over 50 percent of its current climatic range by 2050. The species has moderate potential to breed and forage in suitable habitat in the Region I analysis area.

The chestnut-collared longspur is an obligate of grassland habitat and prefers native prairie habitat. The species has disappeared from much of its historic range due to habitat loss, alteration, and fragmentation. The chestnut-collared longspur also is threatened by environmental contaminants such as insecticides used to control grasshoppers. The species experiences nest parasitism by the brown-headed cowbird to a small degree (Hill and Gould 1997). Brown-headed cowbird populations would be expected to proliferate with an increase in habitat fragmentation and the associated creation of edge habitat (Lowther 1993). In addition, the cowbird utilizes tall shrubs, fences, and power lines as vantage points from which to observe nesting birds in order to deposit eggs (Johnson et al. 2002). Proximity to humans increases the likelihood of secondary predation by domestic and feral cats. The invasion of exotic annual plants, especially cheatgrass, also is a threat.

Impacts from the Project to these and other species that utilize grassland habitat would be expected to result primarily from habitat loss, alteration, and fragmentation. Impacts to migratory bird habitat and species are summarized above in Region I Conclusion. The greatest amount of grassland habitat within the Region I potential disturbance area occurs under Alternative I-C. A total of 20 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation. The least amount of grassland habitat within the Region I potential disturbance area occurs under Alternative I-D. A total of 10 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation.

Greasewood Flat Species

A variety of migratory bird species utilizes greasewood flat habitat in Region I, including 4 BCC and PIF species. The loggerhead shrike was selected as an example for this priority habitat in Region I.

Loggerhead Shrike

The loggerhead shrike is typically non-migratory in the Region I analysis area. The species is designated as BLM sensitive in Wyoming and Nevada, a Colorado SGCN, a Nevada SCP, and a BCC. The species has high potential to occur in the Region I analysis area.

The loggerhead shrike forages in a variety of habitats and nests in shrubs or small trees. The species is threatened by habitat loss, alteration, and fragmentation and by pesticide contamination (Yosef 1996). Proximity to humans increases the likelihood of secondary predation by domestic and feral cats. The invasion of exotic annual plants, especially cheatgrass, also is a threat.

Impacts from the Project to this and other species that utilize greasewood flat habitat would be expected to result primarily from habitat loss, alteration, and fragmentation. Impacts to migratory bird habitat and species are summarized above in Region I Conclusion. The greatest amount of greasewood flat habitat within the Region I potential disturbance area occurs under Alternative I-C. A total of 12 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation. The least amount of greasewood flat habitat within the Region I potential disturbance area occurs under Alternative I-A. A total of 7 percent of this habitat

occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation.

Herbaceous Wetland Species

A variety of migratory bird species utilizes herbaceous wetland habitat in Region I, including 7 BCC and PIF species. The least bittern and yellow-headed blackbird were selected as examples for this priority habitat in Region I.

Least Bittern

The least bittern is a migratory species and could occur in the Region I analysis area during the breeding season. The species is designated as a Nevada SCP and a BCC. The least bittern is considered to be a climate endangered species according to the Audubon Birds and Climate Change Report (National Audubon Society 2014) and may lose over 50 percent of its current climatic range by 2050.The species has low potential to occur in the Region I analysis area.

The least bittern breeds and forages exclusively in herbaceous wetland habitat. Destruction of wetland habitat is likely the greatest threat to the species. Because least bitterns tend to fly low to the ground, collisions with vehicles, fences, and power lines also pose significant threats (Poole et al. 2009).

Yellow-headed Blackbird

The yellow-headed blackbird is a migratory species and could occur in the Region I analysis area during the breeding season. The species is designated as a PIF Species of Conservation Importance. The yellow-headed blackbird has moderate potential to occur in the Region I analysis area.

The yellow-headed blackbird breeds colonially in deep-water emergent wetlands. The species forages mostly on grains in wetland habitats and also in uplands and agricultural areas. Destruction of wetland habitat is likely the greatest threat to the species. Pesticide contamination also poses a threat to the yellow-headed blackbird (Twedt and Crawford 1995). Proximity to humans increases the likelihood of secondary predation by domestic and feral cats. The invasion of exotic annual plants, especially cheatgrass, also is a threat. The yellow-headed blackbird is considered to be a climate endangered species according to the Audubon Birds and Climate Change Report (National Audubon Society 2014) and may lose over 50 percent of its current climatic range by 2050.

Impacts from the Project to these and other species that utilize herbaceous wetland habitat would be expected to result primarily from habitat loss, alteration, and fragmentation. Impacts to migratory bird habitat and species are summarized above in Region I Conclusion. In addition, impacts to herbaceous wetlands would be avoided or minimized by spanning these habitats to the extent practicable. To the extent that impacts to jurisdictional wetlands are unavoidable and require a 404 permit, compensatory mitigation would be required to replace Project impacts to wetland functions, including migratory bird habitat. The greatest amount of herbaceous wetland habitat within the Region I potential disturbance area occurs under Alternative I-D. A total of 6 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation. The least amount of herbaceous wetland habitat within the Region I potential disturbance area occurs under Alternative I-C. A total of 11 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation.

Open Water Species

A variety of migratory bird species forages in and over open water habitats in Region I, including 3 BCC and PIF species. The eared grebe and bald eagle were selected as examples for this priority habitat in Region I. The bald eagle is analyzed in detail in Section 3.8, Special Status Wildlife Species.

Eared Grebe

The eared grebe is a migratory species and could occur in the Region I analysis area during the breeding season. The species is designated as a Colorado SGCN and a BCC. The eared grebe is considered to be a climate endangered species according to the Audubon Birds and Climate Change Report (National Audubon Society 2014) and may lose over 50 percent of its current climatic range by 2050. The species has low potential to breed and forage in the Region I analysis area.

The eared grebe is a night migrant and travels in large flocks. The species nests colonially and requires shallow water with emergent vegetation to anchor its floating nest. Destruction of wetland habitat is likely the greatest threat to this species. Selenium runoff from agricultural fields into breeding ponds also is a threat. The eared grebe is intolerant of human disturbance near breeding colonies (Cullen et al. 1999).

Impacts from the Project to this and other species that utilize open water habitat would be expected to result primarily from habitat loss, alteration, and fragmentation. Impacts to migratory bird habitat and species are summarized above in Region I Conclusion. Impacts to open water and surrounding vegetation would be avoided or minimized by spanning these habitats to the extent practicable. To the extent that impacts to jurisdictional wetlands are unavoidable and require a 404 permit, compensatory mitigation would be required to replace Project impacts to wetland functions, including migratory bird habitat. The greatest amount of open water habitat within the Region I potential disturbance area occurs under Alternative I-C. A total of 25 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation. The least amount of open water habitat within the Region I potential disturbance area occurs under Alternatives I-A and I-B. Less than 1 percent of this habitat occurs where these alternatives would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation.

Sagebrush Shrubland Species

A variety of migratory bird species inhabits the sagebrush shrubland community in Region I, including 30 BCC and PIF species. The greater sage-grouse, sage sparrow, Brewer's sparrow, and sage thrasher were selected as examples for this priority habitat in Region I. The greater sage-grouse is analyzed in detail in Section 3.8, Special Status Wildlife Species and the Project Biological Assessment.

Sage Sparrow, Sage Thrasher, Brewer's Sparrow

The sage sparrow, sage thrasher, and Brewer's sparrow are primarily migratory species and could occur in the Region I analysis area during the breeding season. The sage sparrow is designated as BLM sensitive in Wyoming, a Colorado SGCN, a Nevada SCP, a Utah SGCN-Tier III, a Wyoming SGCN-Tier II' a BCC, and a PIF Species of Conservation Concern. The sage thrasher is designated as BLM sensitive in Wyoming, a Nevada SCP, a Utah SGCN-Tier III, a Wyoming SGCN-Tier II, and a BCC. The Brewer's sparrow is designated as BLM sensitive in Wyoming, a Colorado SGCN, a Nevada SCP, a Utah SGCN-Tier III, a Wyoming SGCN-Tier II, a BCC, and a PIF Species of Conservation Importance. The sage sparrow is considered to be a climate endangered species according to the Audubon Birds and Climate Change Report (National Audubon Society 2014) and may lose over 50 percent of its current climatic range by 2050. The sage thrasher and Brewer's sparrow are considered to be climate threatened according to the Audubon Birds and Climate Change Report (National Audubon Society 2014) and may lose over 50 percent of their current climatic range by 2080. These species have high potential to occur in the Region I analysis area.

The sage sparrow, sage thrasher, and Brewer's sparrow are obligates of sagebrush shrubland habitat and the primary threats are habitat loss, alteration, and fragmentation (Martin and Carlson 1998; Reynolds et al. 1999; Rotenberry et al. 1999). Brown-headed cowbird nest parasitism also is a threat. Brown-headed cowbird populations would be expected to proliferate with an increase in habitat fragmentation and the associated creation of edge habitat (Lowther 1993). In addition, the cowbird utilizes tall shrubs, fences, and power lines as vantage points from which to observe nesting birds in order to deposit eggs (Johnson et al. 2002). Proximity to humans increases the likelihood of secondary

predation by domestic and feral cats. Pesticide contamination and the invasion of exotic annual plants, especially cheatgrass, also are threats.

Impacts from the Project to these and other species that utilize sagebrush shrubland habitat would be expected to result primarily from habitat loss, alteration, and fragmentation. Impacts to migratory bird habitat and species are summarized above in Region I Conclusion. Mitigation developed to offset impacts to the greater sage-grouse would be expected to benefit other species that utilize sagebrush shrubland habitat as well. The greatest amount of sagebrush shrubland habitat within the Region I potential disturbance area occurs under Alternative I-C. A total of 14 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation. The least amount of sagebrush shrubland habitat within the Region I potential disturbance area occurs under Alternative I-A. A total of 12 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation.

Saltbush Shrubland Species

A variety of migratory bird species inhabits the saltbush shrubland community in Region I, including 9 BCC and PIF species. The burrowing owl and ferruginous hawk were selected as examples for this priority habitat in Region I.

Burrowing Owl

The burrowing owl is a migratory species and could occur in the Region I analysis area and could occur during the breeding season. The species is designated as BLM sensitive in Wyoming and Utah, Colorado State threatened, a Utah SGCN-Tier II, a Nevada SCP, a Wyoming SGCN-Tier I, and a BCC. The burrowing owl is considered to be a climate endangered species according to the Audubon Birds and Climate Change Report (National Audubon Society 2014) and may lose over 50 percent of its current climatic range by 2050. The species has high potential to breed and forage in suitable habitat in the Region I analysis area.

The burrowing owl utilizes a variety of habitats that contain small mammal burrows for nesting and shelter, including saltbush shrubland. Many populations are in decline due to habitat loss and alteration, especially areas where prairie dog colonies are eradicated. Proximity to humans increases the likelihood of secondary predation by domestic and feral cats. Pesticide contamination and the invasion of exotic annual plants, especially cheatgrass, also are threats (Poulin et al. 2011).

Ferruginous Hawk

The ferruginous hawk is primarily non-migratory in the Region I analysis area and could occur during the breeding season. The species is designated as BLM sensitive in Wyoming, Colorado, and Utah, a Utah SGCN-Tier II, a Wyoming SGCN-Tier I, and a BCC. The ferruginous hawk is considered to be a climate endangered species according to the Audubon Birds and Climate Change Report (National Audubon Society 2014) and may lose over 50 percent of its current climatic range by 2050. The species has high potential to breed and forage in suitable habitat in the Region I analysis area.

The ferruginous hawk breeds, forages, and winters in a variety of habitats, including saltbush shrubland. Optimal ferruginous hawk habitat consists of large expanses of relatively undisturbed grassland and shrubland (Preston 1998). Ferruginous hawks are often associated with prairie dog colonies, which provide concentrated areas of primary prey species. Many populations are in decline due to habitat loss, alteration, and fragmentation. In addition, small mammal control measures reduce prey availability and pesticide contamination can result from ingesting the poisons used to eradicate small mammals (Bechard and Schmutz 1995). The invasion of exotic annual plants, especially cheatgrass, also is a threat to ferruginous hawk habitat (Poulin et al. 2011). Ferruginous hawks are intolerant of disturbance during the breeding season and are prone to abandon nest sites under even low levels of disturbance (Sutter et al. 2005).

Impacts from the Project to these and other species that utilize saltbush shrubland habitat would be expected to result primarily from habitat loss, alteration, and fragmentation. Impacts to migratory bird habitat and species are summarized above in Region I Conclusion. The greatest amount of saltbush shrubland habitat within the Region I potential disturbance area occurs under Alternative I-A. A total of 5 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation. The least amount of saltbush shrubland habitat within the Region I potential disturbance area occurs under Alternative I-C. A total of 12 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation.

Woody Riparian and Wetlands Species

A variety of migratory bird species inhabits the woody riparian and wetlands community in Region I, including 17 BCC and PIF species. The veery and willow flycatcher were selected as examples for this priority habitat in Region I.

Veery

The veery is a migratory species and could occur in the Region I analysis area during the breeding season. The species is designated as a Colorado SGCN and a BCC. The veery is considered to be a climate threatened species according to the Audubon Birds and Climate Change Report (National Audubon Society 2014) and may lose over 50 percent of its current climatic range by 2080. The species has low potential to breed and forage in suitable habitat in the Region I analysis area.

Habitat loss, alteration, and fragmentation are the greatest threats to the veery. Brown-headed cowbird nest parasitism also is a threat (Vickery 1996). Brown-headed cowbird populations would be expected to proliferate with an increase in habitat fragmentation and the associated creation of edge habitat (Lowther 1993). In addition, the cowbird utilizes tall shrubs, fences, and power lines as vantage points from which to observe nesting birds in order to deposit eggs (Johnson et al. 2002). Proximity to humans increases the likelihood of secondary predation by domestic and feral cats. The veery is a nocturnal migrant and collision with transmission towers, conductors, and static wires is a threat. Proximity to humans increases the likelihood of secondary predation by domestic and feral cats. The invasion of exotic annual plants, especially cheatgrass, also is a threat.

Willow Flycatcher

The willow flycatcher is a migratory species and could occur in the Region I analysis area during the breeding season. The species is designated as a Nevada SCP, a Wyoming SGCN-Tier III, a BCC, and a PIF Species of Conservation Importance. The willow flycatcher is considered to be a climate threatened species according to the Audubon Birds and Climate Change Report (National Audubon Society 2014) and may lose over 50 percent of its current climatic range by 2080. The species has low potential to breed and forage in suitable habitat in the Region I analysis area.

Impacts from the Project to these and other species that utilize woody riparian and wetlands habitat would be expected to result primarily from habitat loss, alteration, and fragmentation. Impacts to migratory bird habitat and species are summarized above in Region I Conclusion. Impacts to woody riparian and wetlands would be avoided or minimized by spanning these habitats to the extent practicable. To the extent that impacts to jurisdictional wetlands are unavoidable and require a 404 permit, compensatory mitigation would be required to replace Project impacts to wetland functions, including migratory bird habitat. The greatest amount of woody riparian and wetlands habitat within the Region I potential disturbance area occurs under Alternative I-C. A total of 7 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation. The least amount of woody riparian and wetlands habitat within the Region I potential disturbance area occurs under Alternative I-A. A total of 12 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation.

This analysis provides a comparison of the number of priority habitat types and the aggregate acreages and proportions of existing priority habitats among the Project alternatives in the Region I analysis area (**Table 3.22-40**). Alternative I-D would impact the greatest acreage of priority habitats in comparison to other Project alternatives. These potential impacts to priority habitats could result in localized adverse effects to migratory bird species, but are not anticipated to present an imminent threat to the sustainability of BCC and PIF populations within the analysis area due to small proportion of habitats affected and the availability of priority habitat types throughout the analysis area. Potential direct impacts to priority habitats represent <1 percent of each priority habitat type existing within the Region I analysis area. Discussion of the cumulative impacts of this Project in addition to other development actions is discussed in Chapter 5.0 Cumulative Impacts. Of the remaining alternatives considered, Alternative I-A would result in impacts to the lowest amount of priority habitats, according to the defined metrics.

Table 3.22-40 Region I Alternative Rankings

	Metric Rank Among Region I Alternatives Greatest Impact = 1; Least Impact = 4			
	1	**2**	**3**	**4**
Total Indirect Impacts to Priority Habitats	I-D	I-C	I-B	I-A
Total Indirect Impacts to Non-sagebrush Priority Habitats	I-B	I-A	I-D	I-C
Total Indirect Impacts to Wetland/Riparian/Open Water Priority Habitats	I-C	I-D	I-B	I-A
Total Indirect Impacts to Priority Habitats Along Non-co-located Segments	I-D	I-B	I-A	I-C
Total Construction Impacts to Priority Habitats	I-D	I-C	I-B	I-A
Total Operation Impacts to Priority Habitats	I-C	I-D	I-B	I-A
Total Indirect Impacts to IBA Priority Habitats	I-D	I-B	I-A	I-C
Total Indirect Impacts to BHCA Priority Habitats	I-C	I-B	I-A	I-D
Total Length of Alternative	I-C	I-D	I-B	I-A

Under all proposed Region I alternatives and components, adverse impacts to migratory birds, including BCC and PIF species and their habitats would occur. Impacts would vary by species according to species-specific habitat requirements. It is likely that individual birds of a variety of species present in Region I would be impacted on a temporary and short-term basis during construction. Long-term impacts would vary by species and include, but would not be limited to, the loss or conversion of habitat, increased risk of collision, increased habitat fragmentation, noxious weed invasions, and increased noise and disturbance levels from operation and maintenance activities. These impacts are likely to result in locally reduced nesting attempts and breeding success for multiple species; reduced recruitment; and avoidance of otherwise suitable habitat that has been fragmented by the Project.

3.22.6.4 Region II

Alternative II-A

Habitat Disturbance and Fragmentation

Alternative II-A would traverse approximately 258 miles of habitat in Colorado and Utah. Approximately 222 miles (86 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.22-41**. Existing conditions within the Alternative II-A potential disturbance areas relative to migratory birds 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 Alternative II-A potential disturbance area, and the Town of Dinosaur, Colorado. Avian habitat along Alternative II-A in Moffat

County, Colorado, is fragmented by US-40, which parallels the potential disturbance areas to the Utah-Colorado border. Sources of disturbance in Uintah County, Utah, include oil and gas operations, livestock operations, and center pivot agricultural operations near the communities of Roosevelt and Duchesne. In Duchesne County, Utah, sources of disturbance include oil and gas operations, livestock operations, center pivot agricultural operations, and the communities of Fort Duchesne, Roosevelt, and Fruitland. Avian habitat in Wasatch County, Utah, becomes less fragmented as the landscape becomes more forested and mountainous. In Utah County, Utah, the major sources of fragmentation within the Alternative II-A potential disturbance area are US-89 and US-6, which parallel Alternative II-A for approximately 17 miles. Major sources of disturbance and fragmentation in Juab County, Utah, are center pivot agricultural operations, the Town of Nephi, Utah, and the IPP located north of Delta, Utah. A total of 1,102 miles of existing roads (4.27 miles of existing roads per mile of alternative) are located within the Alternative II-A potential disturbance area, as presented in **Table 3.22-41.** This represents the highest existing road density and habitat fragmentation within the potential disturbance areas among Region II alternatives.

Table 3.22-41 Region II Summary of Existing Conditions

Alternative	Total Length (miles)	Length of Non-co-located Construction[1] (miles)	Length of Co-located Construction (miles)	Existing Roads within Potential Disturbance Areas Miles	Miles of Roads within Region II Disturbance Areas/Miles of Alternative[2]
II-A	258	86	173	1,102	4.27
II-B	346	221	127	1,132	3.27
II-C	365	247	121	1,513	4.15
II-D	259	189	70	755	2.92
II-E	268	97	171	1,087	4.06
II-F	265	170	95	941	3.55
II-G	252	91	160	1,028	4.08

[1] Non-co-located construction refers to areas that are not co-located with existing aboveground utilities.

[2] Indicator of existing habitat fragmentation.

Table 3.22-42 provides a tabulation of impacts associated with the alternative routes in Region II. Key impact parameters that relate to the impact discussion in Section 3.22.6.2, Impacts Common to All Alternative Transmission Line Routes and Associated Components, and specific differences by alternative are discussed below.

Key Parameters Summary

Migratory Bird Habitat

The types of impacts to migratory bird habitat under Alternative II-A are described in Section 3.22.6.2, Impacts Common to All Alternative Transmission Line Routes and Associated Components. Alternative II-A would include construction and operation impacts to 3,538 acres and 957 acres, respectively, of potentially suitable breeding, roosting, foraging, and winter habitats. These areas represent 0.03 percent and 0.01 percent of potentially suitable habitat within the Region II analysis area.

Region II priority habitats were determined from the SWAPs and PIF Bird Conservation Plans for Colorado and Utah (CPW 2006; PIF 2000; PIF 2002; Sutter et al. 2005). Region II priority habitats are denoted in **Table 3.22-42** with a footnote and include aspen forest and woodland, desert shrubland, grassland, herbaceous wetland, montane grassland, montane shrubland, open water, pinyon-juniper woodland, sagebrush shrubland, and woody riparian and wetlands.

IBA and BHCA Habitats

The types of impacts to IBA and BHCA habitats under Alternative II-A would be the same as those described for Alternative I-A, but would differ in the amount and type of habitat disturbed. Potential direct impacts to IBAs under Alternative II-A would include construction and operation impacts to approximately 19 acres and 7 acres, respectively, of high quality avian habitats within the Upper Strawberry Watershed IBA. These areas represent 0.01 percent of the Upper Strawberry Watershed IBA within the Region II analysis area. Potential indirect impacts under Alternative II-A would occur to 8,340 acres, which represent 6.57 percent of the Upper Strawberry Watershed IBA within the Region II analysis area (**Tables 3.22-42** and **3.22-46**).

Potential direct impacts to BHCAs under Alternative II-A would include construction and operation impacts to approximately 420 acres and 142 acres, respectively, of avian habitats with high conservation value. These areas represent 0.02 percent and <0.01 percent of BHCAs within the Region II analysis area. Potential indirect impacts to BHCAs under Alternative II-A would occur to 47,170 acres, which represent 2.69 percent of BHCAs within the Region II analysis area (**Tables 3.22-42** and **3.22-46**).

Table 3.22-43 presents the total potential impacts to priority habitats within IBAs and BHCAs that would occur under Alternative II-A. **Table 3.22-45** presents a summary of potential impacts to priority habitats within IBAs and BHCAs for this alternative. Also presented are acreages of each vegetation community that are co-located with existing aboveground utilities. Operational impacts such as long-term habitat fragmentation are anticipated to be reduced along co-located portions of an alternative as migratory bird habitat in these areas has already been fragmented by existing transmission lines. Priority habitats within IBAs and BHCAs in the Region II analysis area are presented in **Table 3.22-44**.

Migratory Bird Species

Impacts to migratory bird species under Alternative II-A would vary in conjunction with the amount and type of habitat disturbed. **Table 3.22-42** presents a summary of Region II alternative route impact parameters for migratory bird species based on their breeding, foraging, and winter habitat associations. Included in this table is a summary of impacts to each vegetation community that provides habitat for migratory birds. In addition to habitat impacts, potential impacts to migratory bird species may occur as a result of collision. **Table 3.22-41** presents the length of Alternative II-A, which provides a measure of collision potential with the transmission line and associated structures. Also presented are the length and density of existing roads, which provide a measure of collision potential with vehicles and equipment. The density of existing roads within the Region II potential disturbance areas also is an indicator of current habitat fragmentation along each alternative route.

Raptors, particularly juveniles, and other large species are particularly susceptible to collision (APLIC 2012).The number of raptor nests in proximity to Project potential disturbance areas is one indicator of habitat quality and collision potential and can be compared among alternatives. A total of 179 known raptor nests occur within 1 mile of the potential disturbance areas under Alternative II-A (**Table 3.22-42**). This total is presented by species in **Table 3.22-47**.

A total of 58 BCC and PIF species potentially occur within the Region II analysis area (**Table 3.22-6**). These species were identified by the USFWS and Partners in Flight as species that, without additional conservation actions, are likely to become candidates for listing under the Endangered Species Act of 1973. Each species designated has a unique set of habitat requirements, range of potential threats to its populations and habitat, and documented understanding of sensitivity to direct and indirect impacts from anthropogenic development. Therefore, this analysis makes no further attempt at characterizing these species with respect to differences in conservation priority. Of the 58 BCC and PIF species potentially inhabiting the Region II analysis area, 35 species also are designated as Species of Greatest Conservation Need in Colorado or Utah (CDOW 2006; Sutter et al. 2005).

Table 3.22-42 Region II Alternative Route Impact Parameters

Parameter	Alternative II-A			Alternative II-B			Alternative II-C			Alternative II-D			Alternative II-E			Alternative II-F			Alternative II-G		
	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts
Migratory Bird Species																					
Total migratory bird habitat (acres)[1]	3,537	957	387,692	4,621	1,141	490,820	4,795	1,116	512,102	3,809	1,043	398,735	3,741	997	400,930	4,057	1,148	416,647	3,486	960	312,831
Percentage of existing habitat within Region II analysis area	0.03	0.01	3.64	0.04	0.01	4.61	0.05	0.01	4.81	0.05	0.01	4.81	0.04	0.01	3.77	0.04	0.01	3.92	0.03	0.01	2.94
Relative Collision Potential for Migratory Birds																					
Length of transmission line (miles)[2]	257			345			365			259			268			265			252		
Raptor Nests[3]																					
Number within 1 mile of the potential disturbance areas[4]	179			211			164			349			217			275			181		
Bird Habitat Conservation Areas																					
CO–17: Colorado National Monument; Rabbit Valley; uplands BHCA (acres)	–	–	–	28	8	5,327	28	8	5,327	–	–	–	–	–	–	–	–	–	–	–	–
Percentage of existing CO–17: Colorado National Monument; Rabbit Valley; uplands BHCA habitat within the Region II analysis area	–	–	–	0.03	0.01	5.45	0.03	0.01	5.45	–	–	–	–	–	–	–	–	–	–	–	–
CO–30: White River BHCA (acres)	–	–	–	231	48	13,142	231	48	13,142	–	–	–	–	–	–	–	–	–	–	–	–
Percentage of existing CO–30: White River BHCA habitat within the Region II analysis area	–	–	–	0.34	0.07	19.26	0.34	0.07	19.26	–	–	–	–	–	–	–	–	–	–	–	–
CO–31: Roan Plateau; Piceance Creek; Cathedral Bluffs BHCA (acres)	–	–	–	1,185	260	101,305	1185	260	101,305	–	–	–	–	–	–	–	–	–	–	–	–
Percentage of existing CO–31: Roan Plateau; Piceance Creek; Cathedral Bluffs BHCA habitat within the Region II analysis area	–	–	–	0.24	0.05	20.24	0.24	0.05	20.24	–	–	–	–	–	–	–	–	–	–	–	–
UT–16: Utah Lake/Mona Lake/Tintic Valley BHCA (acres)	47	10	6,702	–	–	–	–	–	–	8	3	3,627	8	3	3,627	8	3	3,627	–	–	–
Percentage of existing UT–16: Utah Lake/Mona Lake/Tintic Valley BHCA habitat within the Region II analysis area	0.03	0.01	4.43	–	–	–	–	–	–	0.01	<0.01	2.40	0.01	<0.01	2.40	0.01	<0.01	2.40	–	–	–
UT–20: Upper Strawberry/Avintaquin BHCA (acres)	208	72	23,969	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	201	71	24,120
Percentage of existing UT–20: Upper Strawberry/Avintaquin BHCA habitat within the Region II analysis area	0.09	0.03	10.49	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.09	0.03	10.56
UT–21: Duchesne River BHCA (acres)	22	4	3,010	–	–	–	–	–	–	–	–	–	53	13	4,480	–	–	–	22	4	3,010
Percentage of existing UT–21: Duchesne River BHCA habitat within the Region II analysis area	0.03	0.01	4.61	–	–	–	–	–	–	–	–	–	0.08	0.02	6.86	–	–	–	0.03	0.01	4.61
UT–25: Upper Green River BHCA (acres)	25	5	4,250	–	–	–	–	–	–	–	–	–	25	5	4,250	–	–	–	25	5	4,251
Percentage of existing UT–25: Upper Green River BHCA habitat within the Region II analysis area	0.05	0.01	7.93	–	–	–	–	–	–	–	–	–	0.05	0.01	7.93	–	–	–	0.05	0.01	7.93
UT–27: Emma Park BHCA (acres)	–	–	–	–	–	–	–	–	–	4	1	978	82	23	5,374	–	–	1,395	–	–	–
Percentage of existing UT–27: Emma Park BHCA habitat within the Region II analysis area	–	–	–	–	–	–	–	–	–	0.07	0.02	18.08	1.52	0.43	99.39	–	–	25.80	–	–	–
UT–29: Nebo Creek BHCA (acres)	118	51	9,239	–	–	–	–	–	–	–	–	–	118	51	9,239	118	51	9,239	118	51	9,239`
Percentage of existing UT–29: Nebo Creek BHCA habitat within the Region II analysis area	0.45	0.19	34.89	–	–	–	–	–	–	–	–	–	0.45	0.19	34.89	0.45	0.19	34.89	0.45	0.19	34.89
UT–30: Sevier Bridge/Chicken Creek BHCA (acres)	–	–	–	142	32	17,132	4	1	1,741	–	–	–	–	–	–	–	–	–	–	–	–
Percentage of existing UT–30: Sevier Bridge/Chicken Creek BHCA habitat within the Region II analysis area	–	–	–	0.01	<0.01	0.87	<0.01	<0.01	0.09	–	–	–	–	–	–	–	–	–	–	–	–
UT–31: Delta BHCA (acres)	–	–	–	64	9	7,906	26	7	4,593	–	–	–	–	–	–	–	–	–	–	–	–
Percentage of existing UT–31: Delta BHCA habitat within the Region II analysis area	–	–	–	0.06	0.01	7.48	0.02	0.01	4.35	–	–	–	–	–	–	–	–	–	–	–	–
UT–37: Green River BHCA (acres)	–	–	–	34	8	3,173	34	8	3,173	38	11	5,777	–	–	–	38	11	5,777	–	–	–
Percentage of existing UT–37: Green River BHCA habitat within the Region II analysis area	–	–	–	0.05	0.01	4.58	0.05	0.01	4.58	0.05	0.02	8.34	–	–	–	0.05	0.02	8.34	–	–	–
UT–41: Cisco Desert BHCA (acres)	–	–	–	398	117	74,491	398	117	74,491	–	–	–	–	–	–	–	–	–	–	–	–

Table 3.22-42 Region II Alternative Route Impact Parameters

Parameter	Alternative II-A			Alternative II-B			Alternative II-C			Alternative II-D			Alternative II-E			Alternative II-F			Alternative II-G		
	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts
Percentage of UT–41: Cisco Desert BHCA habitat within the Region II analysis area	–	–	–	0.16	0.05	30.41	0.16	0.05	30.41	–	–	–	–	–	–	–	–	–	–	–	–
Audubon Important Bird Area																					
Upper Strawberry Watershed IBA (acres)	19	7	8,340	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	19	7	8,340
Percentage of existing IBA habitat within the Region II analysis area (acres)	0.01	0.01	6.57	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	0.01	0.01	6.57
Migratory Bird Habitat Associations																					
Agricultural Land	361	75	35,247	119	40	16,024	181	45	19,165	84	29	9,198	258	61	26,746	120	30	7,179	319	60	32,320
Percentage of existing habitat within the Region II analysis area	0.07	0.02	7.25	0.02	0.01	3.30	0.04	0.01	3.94	0.02	0.01	1.89	0.05	0.01	5.50	0.02	0.01	1.48	0.07	0.01	6.65
Aspen Forest and Woodland[5]	123	45	13,553	186	52	15,182	52	13	5,453	269	83	22,729	89	26	9,772	219	73	16,501	121	45	13,748
Percentage of existing habitat within the Region II analysis area	0.02	0.01	2.33	0.03	0.01	2.61	0.01	<0.01	0.94	0.05	0.01	3.91	0.02	<0.01	1.68	0.04	0.01	2.84	0.02	0.01	2.37
Barren/Sparsely Vegetated	14	5	2,825	108	27	16,327	145	36	17,426	32	10	4,941	18	5	2,832	33	10	5,027	15	5	2,830
Percentage of existing habitat within the Region II analysis area	0.01	<0.01	1.28	0.05	0.01	7.37	0.07	0.02	7.87	0.01	<0.01	2.23	0.01	<0.01	1.28	0.01	<0.01	2.27	0.01	<0.01	1.28
Cliff and Canyon	66	21	7,666	92	22	10,388	142	34	15,867	117	32	14,609	85	21	10,854	127	36	15,238	65	21	7,992
Percentage of existing habitat within the Region II analysis area	0.01	<0.01	1.35	0.02	<0.01	1.84	0.03	0.01	2.80	0.02	0.01	2.58	0.02	<0.01	1.92	0.02	0.01	2.69	0.01	<0.01	1.41
Conifer Forest	53	19	6,642	160	45	14,297	43	10	4,947	165	46	13,437	83	19	9,818	191	67	17,256	52	19	6,932
Percentage of existing habitat within the Region II analysis area	0.01	<0.01	1.37	0.03	0.01	2.96	0.01	<0.01	1.02	0.03	0.01	2.78	0.02	<0.01	2.03	0.04	0.01	3.57	0.01	<0.01	1.43
Deciduous Forest	17	6	1,912	<1	<1	13	<1	<1	4	<1	<1	64	4	1	380	4	1	397	16	6	1,891
Percentage of existing habitat within the Region II analysis area	0.12	0.04	13.64	<0.01	<0.01	0.09	<0.01	<0.01	0.03	<0.01	<0.01	0.46	0.03	0.01	2.71	0.03	0.01	2.83	0.11	0.04	13.49
Desert Shrubland[5]	–	–	–	7	2	1,323	21	4	1,905	–	–	–	–	–	–	–	–	–	–	–	–
Percentage of existing habitat within the Region II analysis area	–	–	–	0.01	<0.01	1.05	0.02	<0.01	1.51	–	–	–	–	–	–	–	–	–	–	–	–
Dunes	<1	<1	22	2	<1	177	3	1	380	<1	<1	22	<1	<1	22	<1	<1	22	0	0	22
Percentage of existing habitat within the Region II analysis area	<0.01	<0.01	0.07	0.01	<0.01	0.54	0.01	<0.01	1.17	<0.01	<0.01	0.07	<0.01	<0.01	0.07	<0.01	<0.01	0.07	<0.01	<0.01	0.07
Grassland[5]	244	51	27,483	191	41	24,992	279	61	30,294	290	66	29,710	240	54	27,066	319	71	30,097	214	48	25,318
Percentage of existing habitat within the Region II analysis area	0.05	0.01	5.34	0.04	0.01	4.86	0.05	0.01	5.89	0.06	0.01	5.78	0.05	0.01	5.26	0.06	0.01	5.85	0.04	0.01	4.92
Greasewood Flat	148	31	18,282	412	79	49,061	408	90	50,313	189	45	23,716	175	37	20,086	183	43	23,209	147	31	18,153
Percentage of existing habitat within the Region II analysis area	0.03	0.01	3.58	0.08	0.02	9.62	0.08	0.02	9.86	0.04	0.01	4.65	0.03	0.01	3.94	0.04	0.01	4.55	0.03	0.01	3.56

Table 3.22-42 Region II Alternative Route Impact Parameters

Parameter	Alternative II-A			Alternative II-B			Alternative II-C			Alternative II-D			Alternative II-E			Alternative II-F			Alternative II-G		
	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts	Construct. Impacts	Operation Impacts	Indirect Impacts
Herbaceous Wetland[5]	15	4	2,506	9	2	1,496	7	2	1,391	17	4	2,699	29	6	3,796	11	2	2,246	14	3	2,630
Percentage of existing habitat within the Region II analysis area	0.02	<0.01	2.95	0.01	<0.01	1.76	0.01	<0.01	1.64	0.02	<0.01	3.18	0.03	0.01	4.47	0.01	<0.01	2.64	0.02	<0.01	3.09
Montane Grassland[5]	10	3	1,041	23	7	2,861	2	<1	254	39	10	3,288	19	4	2,113	39	10	3,172	8	3	785
Percentage of existing habitat within the Region II analysis area	0.01	<0.01	1.56	0.03	0.01	4.29	<0.01	<0.01	0.38	0.06	0.01	4.92	0.03	0.01	3.16	0.06	0.01	4.75	0.01	<0.01	1.18
Montane Shrubland[5]	271	100	27,566	236	68	23,054	266	57	25,219	297	101	27,706	324	122	34,621	363	132	37,082	282	106	28,457
Percentage of existing habitat within the Region II analysis area	0.05	0.02	4.77	0.04	0.01	3.99	0.05	0.01	4.37	0.05	0.02	4.80	0.06	0.02	5.99	0.06	0.02	6.42	0.05	0.02	4.93
Open Water[5]	5	1	2,221	16	3	1,227	18	4	1,792	3	1	971	5	1	1,205	4	1	927	5	1	2,164
Percentage of existing habitat within the Region II analysis area	0.01	<0.01	3.58	0.03	<0.01	1.98	0.03	0.01	2.89	<0.01	<0.01	1.57	0.01	<0.01	1.94	0.01	<0.01	1.49	0.01	<0.01	3.49
Pinyon/Juniper Woodland[5]	546	159	61,196	1006	262	92,518	1038	237	103,781	679	194	67,261	731	213	69,584	680	199	72,339	621	187	70,347
Percentage of existing habitat within the Region II analysis area	0.02	0.01	2.49	0.04	0.01	3.76	0.04	0.01	4.22	0.03	0.01	2.73	0.03	0.01	2.83	0.03	0.01	2.94	0.03	0.01	2.86
Sagebrush Shrubland[5]	1334	348	139,370	1044	251	82,037	1034	228	79,936	1170	103	122,725	1316	338	140,187	1298	354	129,811	1279	337	138,969
Percentage of existing habitat within the Region II analysis area	0.06	0.02	6.14	0.05	0.01	3.62	0.05	0.01	3.52	0.05	<0.01	5.41	0.06	0.01	6.18	0.06	0.02	5.72	0.06	0.01	6.13
Saltbush Shrubland	289	76	35,410	974	230	135,875	1123	284	150,392	445	113	54,275	330	78	38,624	445	112	54,162	288	76	35,286
Percentage of existing habitat within the Region II analysis area	0.02	0.01	2.43	0.07	0.02	9.34	0.08	0.02	10.34	0.03	0.01	3.73	0.02	0.01	2.66	0.03	0.01	3.72	0.02	0.01	2.43
Tundra	–	–	–	8	2	426	–	–	–	<1	<1	7	–	–	–	–	–	–	–	–	–
Percentage of existing habitat within the Region II analysis area	–	–	–	0.06	0.01	3.05	–	–	–	<0.01	<0.01	0.05	–	–	–	–	–	–	–	–	–
Woody Riparian and Wetlands[5]	41	12	4,749	30	7	3,540	33	8	3,582	14	4	1,376	34	10	3,224	20	<1	1,981	41	13	4,850
Percentage of existing habitat within the Region II analysis area	0.04	0.01	4.21	0.03	0.01	3.14	0.03	0.01	3.17	0.01	<0.01	1.22	0.03	0.01	2.86	0.02	<0.01	1.76	0.04	0.01	4.30

[1] All vegetation communities and land forms defined for the Project constitute migratory bird potential habitat except the developed/disturbed community. Although the developed/disturbed land cover type is not considered to be suitable avian habitat and is not included in analyses or reported disturbance acreages, some disturbance-tolerant species utilize these areas. Further discussion of these vegetation communities is included in Section 3.5.6, Impacts to Vegetation.

[2] Length refers to length of 600-kV transmission lines and provides a measure of avian collision potential.

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

[4] Nests of unknown raptor species are tabulated in both Sections 3.8 and 3.22 because they may have been utilized by either special status or non-special status raptor species.

[5] Region II priority habitats, as identified in the Colorado and Utah SWAPs and PIF Bird Conservation Plans.

Table 3.22-43 Alternative II-A Migratory Bird Habitat Analysis Parameters

Alternative II-A Differentiating Metrics	Total (acres)	Rank among Region II Alternatives Greatest Impact = 1 Least Impact = 7
Total Indirect Impacts to Priority Habitats	279,684	4
Total Indirect Impacts to Non-sagebrush Priority Habitats	140,314	7
Total Indirect Impacts to Wetland/Riparian/Open Water Priority Habitats	9,476	2
Total Indirect Impacts to Priority Habitats along Non-co-located Segments	212,284	5
Total Construction Impacts to Priority Habitats	2,590	6
Total Operation Impacts to Priority Habitats	725	5
Total Indirect Impacts to IBA Priority Habitats	6,484	1
Total Indirect Impacts to BHCA Priority Habitats	35,557	3
Total Length of Alternative	258 miles	6

Table 3.22-44 Alternative II-A Priority Habitat Analysis

Alternative II-A Priority Habitats	Construction Impacts to Priority Habitats (acres)	Operation Impacts to Priority Habitats (acres)	Indirect Impacts to Priority Habitats (acres)	Percentage of Existing Priority Habitat Indirectly Impacted within Region II Analysis Area	Indirect Impacts to IBA Priority Habitats (acres)	Indirect Impacts to BHCA Priority Habitats (acres)	Indirect Impacts to Priority Habitats along Non-co-located Segments[1] (acres)	Percentage of Priority Habitats along Non-co-located Segments[1]
Aspen Forest and Woodland	123	45	13,553	2.3	3,719	8,501	10,986	81
Desert Shrubland								
Grassland	244	51	27,483	5.3	-	2,164	22,438	82
Herbaceous Wetland	15	4	2,506	2.9	48	101	2,219	89
Montane Grassland	10	3	1,041	1.6	44	251	707	68
Montane Shrubland	271	100	27,566	4.8	31	1,915	19,617	71
Open Water	5	1	2,221	3.6	683	1,231	2,052	92
Pinyon-juniper Woodland	546	159	61,196	2.5	-	3,459	46,170	75
Sagebrush Shrubland	1,334	348	139,370	6.1	1,905	16,932	104,457	75
Woody Riparian and Wetlands	41	12	4,749	4.2	53	1,003	3,638	77
Total	**2,590**	**725**	**279,684**		**6,484**	**35,557**	**212,284**	

[1] Non-co-located construction refers to areas that are not co-located with existing aboveground utilities.

Table 3.22-45 Region II Priority Habitats within IBAs and BHCAs in the Region II Analysis Area

Priority Habitat	Upper Strawberry Watershed IBA (acres)	CO 17 Colorado National Monument; Rabbit Valley; uplands BHCA (acres)	CO 30 White River BHCA (acres)	CO 31 Roan Plateau; Piceance Creek; Cathedral Bluffs BHCA (acres)	UT 16 Utah Lake; Mona Lake; Tintic Valley BHCA (acres)	UT 20 Upper Strawberry Avintaquin BHCA (acres)	UT 21 Duchesne River BHCA (acres)	UT 25 Upper Green River BHCA (acres)	UT 27 Emma Park BHCA (acres)	UT 29 Nebo Creek BHCA (acres)	UT 30 Sevier Bridge; Chicken Creek BHCA (acres)	UT 31 Delta BHCA (acres)	UT 37 Green River BHCA (acres)	UT 41 Cisco Desert BHCA (acres)
Aspen Forest and Woodland	44,230	–	–	10,712	43	57,893	–	–	24	1,505	–	–	–	–
Desert Shrubland	–	4,029	9	113	–	–	–	–	–	–	–	–	4,767	1,900
Grassland	–	2,506	1,525	7,169	20,583	13	2,785	12,102	1	107	26,926	8,050	3,139	25,943
Herbaceous Wetland	4,310	–	202	267	6	4,813	1,454	45	93	9	11	11,992	2	–
Montane Grassland	1,144	–	–	629	323	2,863	16	–	121	78	3,581	7	–	–
Montane Shrubland	1,124	–	59	49,186	2,751	2,943	–	–	48	8,070	35	40	–	–
Open Water	15,930	1,029	1,118	27	1,555	16,417	1,971	6,523	2	2	598	3,719	6,095	6
Pinyon-Juniper Woodland	–	47,386	16,409	251,361	40,114	20,492	5,070	1,294	763	3,474	21,544	1,436	2,094	3,136
Sagebrush Shrubland	43,865	6,638	23,261	102,139	55,440	74,694	6,234	2,449	3,986	8,350	57,467	3,551	913	2,120
Woody Riparian and Wetlands	3,995	1,414	1,575	679	312	4,495	7,227	7,400	24	284	732	6,168	6,739	879
Total	**114,598**	**63,003**	**44,157**	**422,281**	**121,126**	**184,624**	**24,757**	**28,813**	**5,039**	**21,877**	**110,894**	**34,963**	**23,749**	**33,985**

Table 3.22-46 Region II Impacts to IBA and BHCA Habitats

IBA/BHCA	Alternative II-A (acres)			Alternative II-B (acres)			Alternative II-C (acres)			Alternative II-D (acres)			Alternative II-E (acres)			Alternative II-F (acres)			Alternative II-G (acres)		
	Construction	Operation	Indirect	Construction	Operation	Indirect	Construction	Operation	Indirect	Construction	Operation	Indirect	Construction	Operation	Indirect	Construction	Operation	Indirect	Construction	Operation	Indirect
Upper Strawberry Watershed IBA	19	7	8,340	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	19	7	8,340
CO 17: Colorado National Monument; Rabbit Valley; uplands BHCA	–	–	–	28	8	5,327	28	8	5,327	–	–	–	–	–	–	–	–	–	–	–	–
CO 30: White River BHCA	–	–	–	231	48	13,142	231	48	13,142	–	–	–	–	–	–	–	–	–	–	–	–
CO 31: Roan Plateau; Piceance Creek; Cathedral Bluffs BHCA	–	–	–	1,185	260	101,305	1,185	260	101,305	–	–	–	–	–	–	–	–	–	–	–	–
UT 16: Utah Lake/Mona Lake/Tintic Valley BHCA	47	10	6,702	–	–	–	–	–	–	8	3	3,627	8	3	3,627	47	10	3,627	–	–	–
UT 20: Upper Strawberry/Avintaquin BHCA	208	72	23,969	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	201	71	24,120
UT 21: Duchesne River BHCA	22	4	3,010	–	–	–	–	–	–	–	–	–	53	13	4,480	–	–	–	22	4	3,010
UT 25: Upper Green River BHCA	25	5	4,250	–	–	–	–	–	–	–	–	–	25	5	4,250	–	–	–	25	5	4,251
UT 27: Emma Park BHCA	–	–	–	–	–	–	–	–	–	4	1	978	82	23	5,374	–	–	1,395	–	–	–
UT 29: Nebo Creek BHCA	118	51	9,239	–	–	–	–	–	–	–	–	–	118	51	9,239	118	51	9,239	118	51	9,239
UT 30: Sevier Bridge/Chicken Creek BHCA	–	–	–	142	32	17,132	4	1	1,741	–	–	–	–	–	–	–	–	–	–	–	–
UT 31: Delta BHCA	–	–	–	64	9	7,906	26	7	4,593	–	–	–	–	–	–	–	–	–	–	–	–
UT 37: Green River BHCA	–	–	–	34	8	3,173	34	8	3,173	38	11	5,777	–	–	–	38	11	5,777	–	–	–
UT 41: Cisco Desert BHCA	–	–	–	398	117	74,491	398	117	74,491	–	–	–	–	–	–	–	–	–	–	–	–

Table 3.22-47 Region II Raptor Nests and Winter Roosts within 1 mile of Potential Disturbance Areas

Species	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F	Alternative II-G	Castle Dale Alternative Connector	Price Alternative Connector	Lynndyl Alternative Connector	IPP East Alternative Connector	Roan Cliffs Alternative Connector	Fruitland Micro-siting Option 1	Fruitland Micro-siting Option 2	Fruitland Micro-siting Option 3	Reservation Ridge Alternative Variation	Comparable Portion of Alternative II-F	Strawberry IRA Micro-siting Option 2	Strawberry IRA Micro-siting Option 3	Strawberry IRA Comparable Portion of Alternative II-A
Osprey	2	–	–	1	–	–	2	–	–	–	–	–	1	1	1	–	–	–	–	–
Cooper's Hawk	–	3	2	9	1	4	–	–	5	–	–	–	–	–	–	–	–	–	–	–
Northern Goshawk	9	7	–	22	10	1	11	–	3	–	–	–	–	–	–	–	–	2	2	2
Northern Goshawk Post-Fledging Area	1	–	–	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Red-Tailed Hawk	20	9	1	34	27	22	20	–	13	–	–	–	–	–	–	–	–	–	–	–
Ferruginous Hawk	23	15	15	67	72	67	23	–	1	–	–	–	–	–	–	–	–	–	–	–
Golden Eagle	33	46	15	74	21	43	33	6	37	–	–	1	6	6	6	1	–	–	–	–
American Kestrel	–	–	1	4	1	4	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Peregrine Falcon	–	2	–	3	–	3	–	2	3	–	–	–	–	–	–	–	–	–	–	–
Prairie Falcon	5	1	1	5	2	6	5	–	–	–	–	–	–	–	–	–	–	–	–	–
Great Horned Owl	2	–	2	9	2	9	2	–	–	–	–	–	–	–	–	–	–	–	–	–
Burrowing Owl	–	5	5	21	–	21	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Long-Eared Owl	–	2	3	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Short-Eared Owl	–	–	–	1	–	1	–	–	–	–	–	–	–	–	–	–	–	–	–	–
Common Raven	1	–	2	3	–	3	1	–	–	–	–	–	–	–	–	–	–	1	1	1
Unknown Raptor Species	84	121	117	96	81	91	84	–	–	–	–	–	–	–	–	–	–	–	–	–
Totals	**179**	**211**	**164**	**349**	**217**	**275**	**181**	**8**	**62**	**–**	**–**	**1**	**7**	**7**	**7**	**1**	**–**	**3**	**3**	**3**
Bald Eagle Winter Roost	7	–	–	4	7	4	7	–	–	–	–	–	–	–	–	–	–	–	–	–

Table 3.22-7 presents a tabulation of BCC and PIF species, their nesting, foraging, and winter habitat associations, and their potential for occurrence within each Region II vegetation community. For this analysis, the occurrence of priority habitats serves as an indicator of migratory bird, BCC, and PIF species usage and occurrence potential. **Table 3.22-6** presents Region II BCC and PIF species habitat associations and potential for occurrence.

A total of 8 BCC and PIF species have high potential to occur within Region II priority habitats. These species have potential to occur in priority habitats present along all alternatives; thus a comparison between alternatives of this parameter is not possible. A total of 20 BCC and PIF species have moderate potential to occur within Region II priority habitats and a total of 30 BCC and PIF species have low potential to occur in Region II priority habitats. Among the BCC and PIF species that could occur in the habitats present in Region II, a total of 21 species are considered habitat obligates, both of priority and non-priority vegetation communities. Included in this number are the black rosy-finch and the brown-

capped rosy-finch. These species have specific alpine habitat requirements that do not correspond entirely with the vegetation communities identified for the Project. Also included is the black swift, which has very specific nesting requirements that do not correspond entirely with the cliff and canyon habitat type. Habitat obligate species could be disproportionately impacted by disturbance in their respective habitat types, particularly relative to breeding habitat.

It should be noted that the deciduous and conifer forest vegetation communities, as defined for the Project, are not considered to be priority habitats in Colorado or Utah. Nonetheless, 18 BCC and PIF species, including obligate species, nest, forage, and winter in forest habitats. In addition, cliff and canyon habitats are not considered to be priority habitats in Region II; however, 7 BCC and PIF species require suitable cliff habitat for nesting, thus would be considered obligates of this habitat type.

Design features and additional mitigation measures applicable to avoiding and minimizing impacts to migratory bird species and associated habitats are the same as those identified for Alternative I-A. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to migratory bird species and habitats would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during maintenance activities.

Strawberry IRA Micro-siting Options

TransWest has developed two 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 2 and 3. These micro-siting options would result in similar impacts to migratory bird 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 co-located adjacent to an existing transmission line for approximately 4 miles. Any other differences in impacts to migratory birds and habitat are anticipated to be negligible in comparison to Alternative II-A.

Alternative II-B

Habitat Disturbance and Fragmentation

Alternative II-B would traverse approximately 346 miles of habitat in Colorado and Utah. Approximately 181 miles (52 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.22-41.** Existing conditions within the Alternative II-B potential disturbance areas relative to migratory birds 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 and gas infrastructure located within the potential disturbance areas and the Town of Rangely, Colorado. Avian habitat along Alternative II-B in Rio Blanco County, Colorado, also is fragmented by SH-64, which parallels the potential disturbance areas for several miles east of Rangely and SH-138, which crosses the potential disturbance area south of Rangely. Energy development and infrastructure fragments avian habitat in the Alternative II-B potential disturbance areas along the remainder of the alternative route through Rio Blanco County. Existing disturbance along Alternative II-B would be limited primarily 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 would parallel I-70 across all of Grand County, Utah, and is highly fragmented by the interstate, multiple state highways and county roads, as well as the communities of Harley Dome, Thompson, and Crescent Junction, Utah. Major disturbance also is caused by the Union Pacific Railroad that weaves in and out of the Alternative II-B potential disturbance areas for approximately 40 miles to the border of Emery County. Alternative II-B would parallel US-6/US-191 north from I-70 to the border of Carbon County where the alternative would head west. Disturbances along this stretch of Alternative II-B include I-70, US-6/ US-191, the Union Pacific Railroad, Green River Municipal Airport, and Woodside, Utah. Center pivot agriculture, oil and gas infrastructure, and SR-31 cause the majority of disturbance along this portion of the alternative route until Alternative II-B reaches the Manti-La Sal National Forest. There, disturbance and fragmentation is limited to USFS and county roads to the border of Sanpete County. Avian habitat disturbances in Sanpete County include the towns of Mount Pleasant and Fountain Green, Utah, and

SH-146 and SR-132. The outskirts of Nephi, Utah, heavy agriculture, I-15, and SR-132 cause habitat fragmentation in Juab County. The final segment of Alternate II-B in Millard County would be disturbed by SR-132, SR-125, SR-174, US-6, and the Union Pacific Railroad. Center pivot agriculture and the IPP also exist along the alternative 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 1,132 miles of existing roads (3.27 miles of existing roads per mile of alternative) are located within the Alternative II-B potential disturbance areas, as presented in **Table 3.22-41**. This represents the fifth highest existing road density and habitat fragmentation within the potential disturbance areas among Region II alternatives.

Key Parameters Summary

Migratory Bird Habitat

The types of impacts to migratory bird habitat under Alternative II-B are described in Section 3.22.6.2, Impacts Common to All Alternative Transmission Line Routes and Associated Components. Potential impacts to migratory bird species and associated habitats under Alternative II-B would include construction and operation impacts to 4,621 acres and 1,144 acres, respectively, of potentially suitable breeding, roosting, foraging, and winter habitats. These areas represent 0.11 percent and 0.02 percent of potentially suitable habitat within the Region II analysis area. Region II priority habitats are denoted in **Table 3.22-42** with a footnote and include the aspen forest and woodland, desert shrubland, grassland, herbaceous wetland, montane grassland, montane shrubland, open water, pinyon-juniper woodland, sagebrush shrubland, and woody riparian and wetlands vegetation communities.

IBA and BHCA Habitats

The types of impacts to IBA and BHCA habitats under Alternative II-B would be the same as those described for Alternative I-A, but would differ in the amount and type of habitat disturbed. No IBAs would be impacted under Alternative II-B. Potential direct impacts to BHCAs under Alternative II-B would include construction and operation impacts to approximately 2,082 acres and 482 acres, respectively, of avian habitats with high conservation value. These areas represent 0.12 percent and 0.03 percent of BHCAs in the Region II analysis area. Potential indirect impacts to BHCAs under Alternative II-B would occur to 222,476 acres, which represent 12.71 percent of BHCAs within the Region II analysis area (**Tables 3.22-42** and **3.22-46**).

Table 3.22-48 presents the total potential impacts to priority habitats within IBAs and BHCAs that would occur under Alternative II-B. **Table 3.22-49** presents a summary of potential impacts to priority habitats within IBAs and BHCAs for this alternative. Also presented are acreages of each vegetation community that are co-located with existing aboveground utilities. Operational impacts such as long-term habitat fragmentation are anticipated to be reduced along co-located portions of an alternative as migratory bird habitat in these areas has already been fragmented by existing transmission lines.

Migratory Bird Species

Impacts to migratory bird species under Alternative II-B would vary in conjunction with the amount and type of habitat disturbed. **Table 3.22-41** presents the length of Alternative II-B, which provides a measure of collision potential with the transmission line and associated structures. Also presented are the length and density of existing roads, which provide a measure of collision potential with vehicles and equipment. The density of existing roads within the Region II potential disturbance areas also is an indicator of current habitat fragmentation along each alternative route.

Table 3.22-48 Alternative II-B Migratory Bird Habitat Analysis Parameters

Alternative II-B Differentiating Metrics	Total (acres)	Rank among Region II Alternatives Greatest Impact = 1 Least Impact = 7
Total Indirect Impacts to Priority Habitats	248,232	7
Total Indirect Impacts to Non-sagebrush Priority Habitats	166,195	2
Total Indirect Impacts to Wetland/Riparian/Open Water Priority Habitats	6,263	5
Total Indirect Impacts to Priority Habitats along Non-co-located Segments	206,664	6
Total Construction Impacts to Priority Habitats	2,747	5
Total Operation Impacts to Priority Habitats	695	6
Total Indirect Impacts to IBA Priority Habitats	–	7
Total Indirect Impacts to BHCA Priority Habitats	130,751	1
Total Length of Alternative	346 miles	2

Table 3.22-49 Alternative II-B Priority Habitat Analysis

Alternative II-B Priority Habitats	Construction Impacts to Priority Habitats (acres)	Operation Impacts to Priority Habitats (acres)	Indirect Impacts to Priority Habitats (acres)	Percentage of Existing Priority Habitats Indirectly Impacted within Region II Analysis Area	Indirect Impacts to IBA Priority Habitats (acres)	Indirect Impacts to BHCA Priority Habitats (acres)	Indirect Impacts to Priority Habitats along Non-co-located Segments[1] (acres)	Percentage of Priority Habitats along Non-co-located Segments[1]
Aspen Forest and Woodland	186	52	15,182	2.6	–	2,866	12,577	86
Desert Shrubland	7	2	1,323	1.1	–	431	1,091	82
Grassland	191	41	24,992	4.9	–	11,809	19,220	77
Herbaceous Wetland	9	2	1,496	1.8	–	211	1,239	83
Montane Grassland	23	7	2,861	4.3	–	375	2,059	72
Montane Shrubland	236	68	23,054	4.0	–	9,141	19,661	85
Open Water	16	3	1,227	2.0	–	1,368	766	62
Pinyon-Juniper Woodland	1,006	262	92,518	3.8	–	52,675	81,230	88
Sagebrush Shrubland	1,044	251	82,037	3.6	–	50,444	65,661	80
Woody Riparian and Wetlands	30	7	3,540	3.1	–	1,431	3,161	89
Total	**2,747**	**695**	**248,232**		**0**	**130,751**	**206,664**	

[1] Non-co-located construction refers to areas that are not co-located with existing aboveground utilities.

Raptors, particularly juveniles, and other large species are particularly susceptible to collision (APLIC 2012).The number of raptor nests in proximity to Project potential disturbance areas is one indicator of habitat quality and collision potential and can be compared among alternatives. A total of 211 known raptor nests occur within 1 mile of the potential disturbance areas under Alternative II-B (**Table 3.22-42**). This total is presented by species in **Table 3.22-47.**

Table 3.22-6 presents the BCC and PIF species that could breed, forage, or winter in the Region II analysis area and could be impacted by the Project. **Table 3.22-48** presents a summary of migratory bird analysis parameters along Alternative II-B.

Design features and additional mitigation measures applicable to avoiding and minimizing impacts to migratory bird species and associated habitats are the same as those identified for Alternative I-A. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to migratory bird species and habitats would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during maintenance activities.

Alternative II-C

Habitat Disturbance and Fragmentation

Alternative II-C would traverse approximately 365 miles of avian habitat in Colorado and Utah. Approximately 202 miles (55 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.22-41**. Existing conditions within the Alternative II-C potential disturbance areas relative to migratory birds can be characterized as moderately disturbed and fragmented. Alternative II-C follows the same route as Alternative II-B (see above) until the alternative heads west near Woodside, Utah, in Emery County. Most of the existing disturbance and fragmentation in the remainder of Emery County is near the Town of Emery. Existing disturbance includes the Town of Emery, SR-10, and multiple agricultural operations along the alternative route. There also is an open pit mine within the Alternative II-C potential disturbance area 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 would be crossed twice and part of the Town of Aurora, Utah, occurs within the Alternative II-C potential disturbance areas. Avian habitat along Alternative II-C is highly fragmented throughout most of Millard County beginning where the potential disturbance areas would parallel US-50 to Scipio. At this point, the alternative route would track west and cross the I-15 corridor and follow the southern boundary of the Fishlake National Forest to parallel US-50 to the Delta metropolitan area. The remaining portions of the Alternative II-C corridor are moderately fragmented by county roads, low density oil, gas, and livestock operations, agriculture, and private residences. A total of 1,513 miles of existing roads (4.15 miles of existing roads per mile of alternative) are located within the Alternative II-C potential disturbance areas, as presented in **Table 3.22-41**. This represents the second highest existing road density and habitat fragmentation within the potential disturbance areas among Region II alternatives.

Key Parameters Summary

Migratory Bird Habitat

The types of impacts to migratory bird habitat under Alternative II-C are described in Section 3.22.6.2, Impacts Common to All Alternative Transmission Line Routes and Associated Components. Potential impacts to migratory birds and associated habitats under Alternative II-C would include construction and operation impacts to 4,795 acres and 1,115 acres, respectively, of potentially suitable breeding, roosting, foraging, and winter habitats. These areas represent 0.05 percent and 0.01 percent of potentially suitable habitat within the Region II analysis area. Region II priority habitats are denoted in **Table 3.22-42** with a footnote and include the aspen forest and woodland, desert shrubland, grassland, herbaceous wetland, montane grassland, montane shrubland, open water, pinyon-juniper woodland, sagebrush shrubland, and woody riparian and wetlands vegetation communities.

IBA and BHCA Habitats

The types of impacts to IBA and BHCA habitats under Alternative II-C would be the same as those described for Alternative I-A, but would differ in the amount and type of habitat disturbed. No IBAs would be impacted under Alternative II-C. Potential direct impacts to BHCAs under Alternative II-C would include construction and operation impacts to approximately 1,906 acres and 449 acres, respectively, of avian habitats with high conservation value. These areas represent 0.11 percent and 0.03 percent of BHCAs within the Region II analysis area. Potential indirect impacts to BHCAs under Alternative II-C would occur to 203,772 acres, which represent 11.64 percent of BHCAs in the Region II analysis area (**Table 3.22-46**).

Table 3.22-50 presents the total potential impacts to priority habitats within IBAs and BHCAs that would occur under Alternative II-C. **Table 3.22-51** presents a summary of potential impacts to priority habitats within IBAs and BHCAs for this alternative. Also presented are acreages of each vegetation community that are co-located with existing aboveground utilities. Operational impacts such as long-term habitat fragmentation are anticipated to be reduced along co-located portions of an alternative as migratory bird habitat in these areas has already been fragmented by existing transmission lines.

Migratory Bird Species

Impacts to migratory bird species under Alternative II-C would vary in conjunction with the amount and type of habitat that is disturbed.**Table 3.22-41** presents the length of Alternative II-C, which provides a measure of collision potential with the transmission line and associated structures. Also presented are the length and density of existing roads, which provide a measure of collision potential with vehicles and equipment. The density of existing roads within the Region II potential disturbance areas also is an indicator of current habitat fragmentation along each alternative route.

Raptors, particularly juveniles, and other large species are particularly susceptible to collision (APLIC 2012).The number of raptor nests in proximity to Project potential disturbance areas is one indicator of habitat quality and collision potential and can be compared among alternatives. A total of 164 known raptor nests occur within 1 mile of the potential disturbance areas along Alternative II-C (**Table 3.22-42**). This total is presented by species in **Table 3.22-47**.

Table 3.22-6 presents the BCC and PIF species that could breed, forage, or winter in the Region II analysis area and could be impacted by the Project. **Table 3.22-50** presents a summary of migratory bird analysis parameters along Alternative II-C.

Design features and additional mitigation measures applicable to avoiding and minimizing impacts to migratory bird species and associated habitats are the same as those identified for Alternative I-A. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to migratory bird species and habitats would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during maintenance activities.

Table 3.22-50 Alternative II-C Migratory Bird Habitat Analysis Parameters

Alternative II-C Differentiating Metrics	Total (acres)	Rank among Region II Alternatives Greatest Impact = 1 Least Impact = 7
Total Indirect Impacts to Priority Habitats	253,609	6
Total Indirect Impacts to Non–sagebrush Priority Habitats	173,672	1
Total Indirect Impacts to Wetland/Riparian/Open Water Priority Habitats	6,765	4
Total Indirect Impacts to Priority Habitats along Non–co–located Segments	214,122	4
Total Construction Impacts to Priority Habitats	2,750	4
Total Operation Impacts to Priority Habitats	615	7
Total Indirect Impacts to IBA Priority Habitats	–	7
Total Indirect Impacts to BHCA Priority Habitats	112,972	2
Total Length of Alternative	365 miles	1

Table 3.22–51 Alternative II–C Priority Habitat Analysis

Alternative II–C Priority Habitats	Construction Impacts to Priority Habitats (acres)	Operation Impacts to Priority Habitats (acres)	Indirect Impacts to Priority Habitats (acres)	Percentage of Existing Priority Habitats Indirectly Impacted within Region II Analysis Area	Indirect Impacts to IBA Priority Habitats (acres)	Indirect Impacts to BHCA Priority Habitats (acres)	Indirect Impacts to Priority Habitats along Non–co–located Segments[1] (acres)	Percentage of Priority Habitats along Non–co–located Segments[1]
Aspen Forest and Woodland	52	13	5,453	0.9	–	2,866	4,949	91
Desert Shrubland	21	4	1,905	1.5	–	431	1,795	94
Grassland	279	61	30,294	5.9	–	8,647	24,817	82
Herbaceous Wetland	7	2	1,391	1.6	–	211	1,158	83
Montane Grassland	2	<1	254	0.4	–	38	142	56
Montane Shrubland	266	57	25,219	4.4	–	9,137	21,084	84
Open Water	18	4	1,792	2.9	–	1,899	1,382	77
Pinyon–Juniper Woodland	1,038	237	103,781	4.2	–	49,113	90,498	87
Sagebrush Shrubland	1,034	228	79,936	3.5	–	39,314	65,435	82
Woody Riparian and Wetlands	33	8	3,582	3.2	–	1,317	2,862	80
Total	**2,750**	**614**	**253,609**		**0**	**112,972**	**214,122**	

[1] Non-co-located construction refers to areas that are not co-located with existing aboveground utilities.

Alternative II-D

Habitat Disturbance and Fragmentation

Alternative II-D would traverse approximately 259 miles of avian habitat in Colorado and Utah. Approximately 104 miles (40 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.22-41**. Existing conditions within the Alternative II-D potential disturbance area relative to migratory birds 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, and the Town of Dinosaur, Colorado. Avian habitat along Alternative II-D in Moffat County, Colorado, also is fragmented by the existence of US-40, which parallels the potential disturbance areas to the Utah-Colorado border. Sources of disturbance in Uintah County, Utah, include heavy oil and gas operations, livestock operations, and center pivot agricultural operations near the Town of Jensen. In Duchesne County, Utah, sources of disturbance include oil and gas operations, livestock operations, and center pivot agricultural operations. Disturbance and fragmentation increases in western Carbon County, with an increased presence of oil and gas infrastructure and several major roads (US-191 and US-6) along this section of Alternative II-D. Major sources of disturbance and fragmentation in Juab County, Utah, are center pivot agricultural operations, the Town of Nephi, Utah, and the IPP, located north of Delta, Utah. A total of 755 miles of existing roads (2.92 miles of existing roads per mile of alternative) are located within the Alternative II-D potential disturbance areas, as presented in **Table 3.22-41**. This represents the lowest existing road density and habitat fragmentation within the disturbance areas among Region II alternatives.

Key Parameters Summary

Migratory Bird Habitat

The types of impacts to migratory bird habitat under Alternative II-D are described in Section 3.22.6.2, Impacts Common to All Alternative Transmission Line Routes and Associated Components. Potential impacts to migratory bird species and associated habitats under Alternative II-D would include construction and operation impacts to 3,809 acres and 1,043 acres, respectively, of potentially suitable breeding, roosting, foraging, and winter habitats. These areas represent 0.04 percent and 0.01 percent of potentially suitable habitat within the Region II analysis area. Region II priority habitats are denoted in **Table 3.22-42** with a footnote and include the aspen forest and woodland, desert shrubland, grassland, herbaceous wetland, montane grassland, montane shrubland, open water, pinyon-juniper woodland, sagebrush shrubland, and woody riparian and wetlands vegetation communities.

IBA and BHCA Habitats

The types of impacts to IBA and BHCA habitats under Alternative II-D would be the same as those described for Alternative I-A, but would differ in the amount and type of habitat disturbed. No IBAs would be impacted under Alternative II-D. Potential direct impacts to BHCAs under Alternative II-D would include construction and operation impacts to approximately 50 acres and 15 acres, respectively, of avian habitats with high conservation value. These areas represent <0.01 percent of BHCAs within the Region II analysis area. Potential indirect impacts to BHCAs under Alternative II-D would occur to 10,382 acres, which represent 0.59 percent of BHCAs in the Region II analysis area (**Tables 3.22-42** and **3.22-46**).

Table 3.22-52 presents the total potential impacts to priority habitats within IBAs and BHCAs that would occur under Alternative II-D. **Table 3.22-53** presents a summary of potential impacts to priority habitats within IBAs and BHCAs for this alternative. Also presented are acreages of each vegetation community that are co-located with existing aboveground utilities. Operational impacts such as long-term habitat fragmentation are anticipated to be reduced along co-located portions of an alternative as migratory bird habitat in these areas has already been fragmented by existing transmission lines.

Table 3.22-52 Alternative II-D Migratory Bird Habitat Analysis Parameters

Alternative II-D Differentiating Metrics	Total (acres)	Rank among Region II Alternatives Greatest Impact = 1 Least Impact = 7
Total Indirect Impacts to Priority Habitats	278,466	5
Total Indirect Impacts to Non-sagebrush Priority Habitats	155,741	4
Total Indirect Impacts to Wetland/Riparian/Open Water Priority Habitats	5,046	7
Total Indirect Impacts to Priority Habitats along Non-co-located Segments	243,584	2
Total Construction Impacts to Priority Habitats	2,779	3
Total Operation Impacts to Priority Habitats	767	3
Total Indirect Impacts to IBA Priority Habitats	–	7
Total Indirect Impacts to BHCA Priority Habitats	6,022	7
Total Length of Alternative	259 miles	5

Table 3.22-53 Alternative II-D Priority Habitat Analysis

Alternative II-D Priority Habitats	Construction Impacts to Priority Habitats (acres)	Operation Impacts to Priority Habitats (acres)	Indirect Impacts to Priority Habitats (acres)	Percentage of Existing Priority Habitats Indirect Impacted within Region II Analysis Area	Indirect Impacts to IBA Priority Habitats (acres)	Indirect Impacts to BHCA Priority Habitats (acres)	Indirect Impacts to Priority Habitats along Non-co-located Segments[1] (acres)	Percentage of Priority Habitats along Non-co-located Segments[1]
Aspen Forest and Woodland	269	83	22,729	3.9	–	–	21,595	95
Desert Shrubland								
Grassland	290	66	29,710	5.8	–	1,186	27,167	91
Herbaceous Wetland	17	4	2,699	3.2	–	–	2,472	92
Montane Grassland	39	10	3,288	4.9	–	5	3,125	95
Montane Shrubland	297	101	27,707	4.8	–	3	24,074	87
Open Water	4	1	971	1.6	–	499	968	>99
Pinyon-Juniper Woodland	679	194	67,261	2.7	–	622	59,202	88
Sagebrush Shrubland	1,170	303	122,725	5.4	–	3,243	103,754	85
Woody Riparian and Wetlands	14	4	1,376	1.2	–	465	1,227	89
Total	**2,779**	**767**	**278,466**		**0**	**6,022**	**243,584**	

[1] Non-co-located construction refers to areas that are not co-located with existing aboveground utilities.

Migratory Bird Species

Impacts to migratory bird species under Alternative II-D would vary in conjunction with the amount and type of habitat that is disturbed. **Table 3.22-41** presents the length of Alternative II-D, which provides a measure of collision potential with the transmission line and associated structures. Also presented are the length and density of existing roads, which provide a measure of collision potential with vehicles and equipment. The density of existing roads within the Region II potential disturbance areas also is an indicator of current habitat fragmentation along each alternative route.

Raptors, particularly juveniles, and other large species are particularly susceptible to collision (APLIC 2012).The number of raptor nests in proximity to Project potential disturbance areas is one indicator of habitat quality and collision potential and can be compared among alternatives. A total of 349 known raptor nests occur within 1 mile of the potential disturbance areas under Alternative II-D (**Table 3.22-42**). This total is presented by species in **Table 3.22-47**.

Table 3.22-6 presents the BCC and PIF species that could breed, forage, or winter in the Region II analysis area and could be impacted by the Project. **Table 3.22-52** presents a summary of migratory bird analysis parameters along Alternative II-D.

Design features and additional mitigation measures applicable to avoiding and minimizing impacts to migratory bird species and associated habitats are the same as those identified for Alternative I-A. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to migratory bird species and habitats would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during maintenance activities.

Alternative II-E

Existing Habitat Disturbance and Fragmentation

Alternative II-E would traverse approximately 268 miles of avian habitat in Colorado and Utah. Approximately 221 miles (82 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.22-41**. Existing conditions within the Alternative II-E potential disturbance areas relative to migratory birds 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, and the Town of Dinosaur, Colorado. Avian habitat along Alternative II-E in Moffat County, Colorado, also is fragmented by US-40, which parallels the potential disturbance areas to the Utah-Colorado border. Sources of disturbance in Uintah County, Utah, include oil and gas operations, livestock operations, and center pivot agricultural operations near the Town of Jensen. In Duchesne County, Utah, sources of disturbance include US-40, oil and gas operations, livestock operations, center pivot agricultural operations, and the communities of Bridgeland, Ioca, and Roosevelt. In Utah County, Utah, the major source of fragmentation within the Alternative II-E potential disturbance areas is US-89 and US-6, which parallel Alternative II-E for approximately 17 miles. Major sources of disturbance and fragmentation in Juab County, Utah, are center pivot agricultural operations, the Town of Nephi, and the IPP, located north of Delta, Utah. A total of 1,087 miles of existing roads (4.06 miles of existing roads per mile of alternative) are located within the Alternative II-E potential disturbance areas, as presented in **Table 3.22-41**. This represents the third highest existing road density and habitat fragmentation within the disturbance areas among Region II alternatives.

Key Parameters Summary

Migratory Bird Habitat

The types of impacts to migratory bird habitat under Alternative II-E are described in Section 3.22.6.2, Impacts Common to All Alternative Transmission Line Routes and Associated Components. Potential impacts to migratory bird species and associated habitats under Alternative II-E would include

construction and operation impacts to 3,741 acres and 997 acres, respectively, of potentially suitable breeding, roosting, foraging, and winter habitats. These areas represent 0.04 percent and 0.01 percent of potentially suitable habitat within the Region II analysis area. Region II priority habitats are denoted in **Table 3.22-42** with a footnote and include the aspen forest and woodland, desert shrubland, grassland, herbaceous wetland, montane grassland, montane shrubland, open water, pinyon-juniper woodland, sagebrush shrubland, and woody riparian and wetlands vegetation communities.

IBA and BHCA Habitats

The types of impacts to IBA and BHCA habitats under Alternative II-E would be the same as those described for Alternative I-A, but would differ in the amount and type of habitat disturbed. No IBAs would be impacted under Alternative II-E. Potential direct impacts to BHCAs under Alternative II-E would include construction and operation impacts to approximately 286 acres and 95 acres, respectively, of avian habitats with high conservation value. These areas represent 0.02 percent and <0.01 percent of BHCAs within the Region II analysis area. Potential indirect impacts to BHCAs under Alternative II-E would occur to 26,972 acres, which represent 1.54 percent of BHCAs in the Region II analysis area (**Tables 3.22-42** and **3.22-46**).

Table 3.22-54 presents the total potential impacts to priority habitats within IBAs and BHCAs that would occur under Alternative II-E. **Table 3.22-55** presents a summary of potential impacts to priority habitats within IBAs and BHCAs for this alternative. Also presented are acreages of each vegetation community that are co-located with existing aboveground utilities. Operational impacts such as long-term habitat fragmentation are anticipated to be reduced along co-located portions of an alternative as migratory bird habitat in these areas has already been fragmented by existing transmission lines.

Migratory Bird Species

Impacts to migratory bird species under Alternative II-E would vary in conjunction with the amount and type of habitat that is disturbed. **Table 3.22-41** presents the length of Alternative II-E, which provides a measure of collision potential with the transmission line and associated structures. Also presented are the length and density of existing roads, which provide a measure of collision potential with vehicles and equipment. The density of existing roads within the Region II potential disturbance areas also is an indicator of current habitat fragmentation along each alternative route.

Raptors, particularly juveniles, and other large species are particularly susceptible to collision (APLIC 2012).The number of raptor nests in proximity to Project potential disturbance areas is one indicator of habitat quality and collision potential and can be compared among alternatives. A total of 217 known raptor nests occur within 1 mile of the potential disturbance areas under Alternative II-E (**Table 3.22-42**). This total is presented by species in **Table 3.22-47.**

Table 3.22-6 presents the BCC and PIF species that could breed, forage, or winter in the Region II analysis area and could be impacted by the Project. **Table 3.22-54** presents a summary of migratory bird analysis parameters along Alternative II-E.

Design features and additional mitigation measures applicable to avoiding and minimizing impacts to migratory bird species and associated habitats are the same as those identified for Alternative I-A. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to migratory bird species and habitats would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during maintenance activities.

Table 3.22-54 Alternative II-E Migratory Bird Habitat Analysis Parameters

Alternative II-E Differentiating Metrics	Total (acres)	Rank among Region II Alternatives Greatest Impact = 1 Least Impact = 7
Total Indirect Impacts to Priority Habitats	291,568	2
Total Indirect Impacts to Non-sagebrush Priority Habitats	151,381	5
Total Indirect Impacts to Wetland/Riparian/Open Water Priority Habitats	8,225	3
Total Indirect Impacts to Priority Habitats along Non-co-located Segments	225,309	3
Total Construction Impacts to Priority Habitats	2,787	2
Total Operation Impacts to Priority Habitats	774	2
Total Indirect Impacts to IBA Priority Habitats	–	7
Total Indirect Impacts to BHCA Priority Habitats	21,099	5
Total Length of Alternative	268 miles	3

Table 3.22-55 Alternative II-E Priority Habitat Analysis

Alternative II-E Priority Habitats	Construction Impacts to Priority Habitats (acres)	Operation Impacts to Priority Habitats (acres)	Indirect Impacts to Priority Habitats (acres)	Percentage of Existing Priority Habitats Indirectly Impacted within Region II Analysis Area	Indirect Impacts to IBA Priority Habitats (acres)	Indirect Impacts to BHCA Priority Habitats (acres)	Indirect Impacts to Priority Habitats along Non-co-located Segments[1] (acres)	Percentage of Priority Habitats along Non-co-located Segments[1]
Aspen Forest and Woodland	89	26	9,772	1.7	–	182	8,110	83
Desert Shrubland								
Grassland	240	54	27,066	5.3	–	2,236	23,178	86
Herbaceous Wetland	29	6	3,796	4.5	–	472	3,027	80
Montane Grassland	19	4	2,113	3.2	–	128	1,610	76
Montane Shrubland	324	122	34,621	6.0	–	1,730	25,873	75
Open Water	5	1	1,205	1.9	–	631	1,098	91
Pinyon-Juniper Woodland	731	213	69,584	2.8	–	3,386	51,966	75
Sagebrush Shrubland	1,316	338	140,187	6.2	–	11,563	108,026	77
Woody Riparian and Wetlands	34	10	3,224	2.9	–	770	2,421	75
Total	**2,787**	**774**	**291,568**		**0**	**21,099**	**225,309**	

[1] Non-co-located construction refers to areas that are not co-located with existing aboveground utilities.

Alternative II-F

Habitat Disturbance and Fragmentation

Alternative II-F would cross approximately 265 miles of avian habitat in Colorado and Utah. Approximately 133 miles (49 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.22-41**. Existing conditions within the Alternative II-F potential disturbance areas relative to migratory birds 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, and the Town of Dinosaur, Colorado. Avian habitat along Alternative II-F in Moffat County, Colorado, also is fragmented by US-40, which parallels the potential disturbance areas to the Utah-Colorado border. Sources of disturbance in Uintah County, Utah, include heavy oil and gas operations, livestock operations, and center pivot agricultural operations near the Town of Roosevelt. In Duchesne County, Utah, sources of disturbance also include oil and gas operations, livestock operations, and center pivot agricultural operations. In Utah County, Utah, the major source of fragmentation within the Alternative II-F potential disturbance areas is US-89 and US-6, which parallel Alternative II-F for approximately 17 miles. Major sources of disturbance and fragmentation in Juab County, Utah, are center pivot agricultural operations, the Town of Nephi, and the IPP, located north of Delta. 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 941 miles of existing roads (3.55 miles of existing roads per mile of alternative) are located within the Alternative II-F potential disturbance areas as presented in **Table 3.22-41**. This represents the fourth highest existing road density and habitat fragmentation within the potential disturbance areas among Region II alternatives.

Key Parameters Summary

Migratory Bird Habitat

The types of impacts to migratory bird habitat under Alternative I-B are described in Section 3.22.6.2, Impacts Common to All Alternative Transmission Line Routes and Associated Components. Potential impacts to migratory bird species and associated habitats under Alternative II-F would include construction and operation impacts to 4,057 acres and 1,148 acres, respectively, of potentially suitable breeding, roosting, foraging, and winter habitats. These areas represent 0.04 percent and 0.01 percent of potentially suitable habitat within the Region II analysis area. Region II priority habitats are denoted in **Table 3.22-42** with a footnote and include the aspen forest and woodland, desert shrubland, grassland, herbaceous wetland, montane grassland, montane shrubland, open water, pinyon-juniper woodland, sagebrush shrubland, and woody riparian and wetlands vegetation communities.

IBA and BHCA Habitats

The types of impacts to IBA and BHCA habitats under Alternative II-F would be the same as those described for Alternative I-A, but would differ in the amount and type of habitat disturbed. No IBAs would be impacted under Alternative II-F. Potential direct impacts to BHCAs under Alternative II-F would include construction and operation impacts to approximately 203 acres and 72 acres, respectively, of avian habitats with high conservation value. These areas represent 0.01 percent and <0.01 percent of BHCAs within the Region II analysis area. Potential indirect impacts to BHCAs under Alternative II-F would occur to 20,039 acres, which represent 1.142 percent of BHCAs in the Region II analysis area (**Tables 3.22-42** and **3.22-46**).

Table 3.22-56 presents the total potential impacts to priority habitats within IBAs and BHCAs that would occur under Alternative II-F. **Table 3.22-57** presents a summary of potential impacts to those priority habitats within IBAs and BHCAs for this alternative. Also presented are acreages of each vegetation community that are co-located with existing aboveground utilities. Operational impacts such as long-term habitat fragmentation are anticipated to be reduced along co-located portions of an alternative as migratory bird habitat in these areas has already been fragmented by existing transmission lines.

Table 3.22-56 Alternative II-F Migratory Bird Habitat Analysis Parameters

Alternative II-F Differentiating Metrics	Total (acres)	Rank among Region II Alternatives Greatest Impact = 1 Least Impact = 7
Total Indirect Impacts to Priority Habitats	294,156	1
Total Indirect Impacts to Non-sagebrush Priority Habitats	164,345	3
Total Indirect Impacts to Wetland/Riparian/Open Water Priority Habitats	5,154	6
Total Indirect Impacts to Priority along Non-co-located Segments	248,332	1
Total Construction Impacts to Priority Habitats	2,953	1
Total Operation Impacts to Priority Habitats	848	1
Total Indirect Impacts to IBA Priority Habitats	–	7
Total Indirect Impacts to BHCA Priority Habitats	15,106	6
Total Length of Alternative	267 miles	4

Table 3.22-57 Alternative II-F Priority Habitat Analysis

Alternative II-F Priority Habitats	Construction Impacts to Priority Habitats (acres)	Operation Impacts to Priority Habitats (acres)	Indirect Impacts to Priority (acres)	Percentage of Existing Priority Habitats Indirectly Impacted within Region II Analysis Area	Indirect Impacts to IBA Priority Habitats (acres)	Indirect Impacts to BHCA Priority Habitats (acres)	Indirect Impacts to Priority Habitats along Non-co-located Segments[1] (acres)	Percentage of Priority Habitats along Non-co-located Segments[1]
Aspen Forest and Woodland	219	73	16,501	2.8	–	182	15,112	92
Desert Shrubland								
Grassland	319	71	30,097	5.9	–	1,197	27,583	92
Herbaceous Wetland	11	2	2,246	2.6	–	4	2,037	91
Montane Grassland	39	10	3,172	4.8	–	47	3,025	95
Montane Shrubland	363	132	37,082	6.4	–	1,713	28,445	77
Open Water	4	1	927	1.5	–	501	924	>99
Pinyon-Juniper Woodland	680	199	72,339	2.9	–	2,867	59,889	83
Sagebrush Shrubland	1,298	354	129,811	5.7	–	8,028	109,722	85
Woody Riparian and Wetlands	20	7	1,981	1.8	–	568	1,595	81
Total	**2,953**	**848**	**294,156**		**0**	**15,106**	**248,332**	

[1] Non-co-located construction refers to areas that are not co-located with existing aboveground utilities.

Migratory Bird Species

Impacts to migratory bird species under Alternative II-F would vary in conjunction with the amount and type of habitat that is disturbed. **Table 3.22-41** presents the length of Alternative II-F, which provides a measure of collision potential with the transmission line and associated structures. Also presented are the length and density of existing roads, which provide a measure of collision potential with vehicles and equipment. The density of existing roads within the Region II potential disturbance areas also is an indicator of current habitat fragmentation along each alternative route.

Raptors, particularly juveniles, and other large species are particularly susceptible to collision (APLIC 2012).The number of raptor nests in proximity to Project potential disturbance areas is one indicator of habitat quality and collision potential and can be compared among alternatives. A total of 275 known raptor nests within 1 mile of the potential disturbance areas under Alternative II-F (**Table 3.22-42**). This total is presented by species in **Table 3.22-47.**

Table 3.22-6 presents the BCC and PIF species that could nest, forage, or winter in the Region II analysis area and could be impacted by the Project. **Table 3.22-56** presents a summary of migratory bird analysis parameters along Alternative II-F.

Design features and additional mitigation measures applicable Design features and additional mitigation measures applicable to avoiding and minimizing impacts to migratory bird species and associated habitats are the same as those identified for Alternative I-A. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to migratory bird species and habitats would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during maintenance activities.

Alternative II-G

Habitat Disturbance and Fragmentation

Alternative II-G would traverse approximately 252 miles of habitat in Colorado and Utah. Approximately 160 miles (64 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.22-41**. Existing conditions within the Alternative II-G potential disturbance areas relative to migratory birds can be characterized as moderately disturbed and fragmented. Major sources of disturbance along Alternative II-G in western Colorado and eastern Utah include several livestock operation roads, a major surface coal mining operation located within the Alternative II-G potential disturbance area, and the Town of Dinosaur, Colorado. Avian habitat along Alternative II-G in Moffat County, Colorado, is fragmented by US-40, which parallels the potential disturbance areas to the Utah-Colorado border. Sources of disturbance in Uintah County, Utah, include oil and gas operations, livestock operations, and center pivot agricultural operations near the communities of Roosevelt and Duchesne. In Duchesne County, Utah, sources of disturbance include oil and gas operations, livestock operations, center pivot agricultural operations, and the communities of Fort Duchesne, Roosevelt, and Fruitland. Avian habitat in Wasatch County, Utah, becomes less fragmented as the landscape becomes more forested and mountainous. In Utah County, Utah, the major sources of fragmentation within the Alternative II-G potential disturbance area are US-89 and US-6, which parallel Alternative II-G for approximately 17 miles. Major sources of disturbance and fragmentation in Juab County, Utah, are center pivot agricultural operations, the Town of Nephi, Utah, and the IPP located north of Delta, Utah. A total of 1, 028 miles of existing roads (4.08 miles of existing roads per alternative) are located within the Alternative II-G potential disturbance area, as presented in **Table 3.22-41.** This represents the highest existing road density and habitat fragmentation within the potential disturbance areas among Region II alternatives.

Migratory Bird Habitat

The types of impacts to migratory bird habitat under Alternative II-G are described in Section 3.22.6.2, Impacts Common to All Alternative Transmission Line Routes and Associated Components. Potential impacts to migratory bird species and associated habitats under Alternative II-G would include construction and operation impacts to 3,486 acres and 960 acres, respectively, of potentially suitable breeding, roosting, foraging, and winter habitats. These areas represent 0.03 percent and 0.01 percent of potentially suitable habitat within the Region II analysis area. Indirect impacts would occur to 312,831 acres, which represent 2.94 percent of potentially suitable habitat within the Region II analysis area. Region II priority habitats are denoted in **Table 3.22-42** with a footnote and include the aspen forest and woodland, desert shrubland, grassland, herbaceous wetland, montane grassland, montane shrubland, open water, pinyon-juniper woodland, sagebrush shrubland, and woody riparian and wetlands vegetation communities.

IBA and BHCA Habitats

The types of impacts to IBA and BHCA habitats under Alternative II-G would be the same as those described for Alternative I-A, but would differ in the amount and type of habitat disturbed. Potential direct impacts under Alternative II-G would include the construction and operation impacts to approximately 19 acres and 7 acres, respectively, of high quality avian habitats within the Upper Strawberry Watershed IBA. These areas represent 0.01 percent of the Upper strawberry Watershed IBA within the Region II analysis area. Potential indirect impacts under Alternative II-G would occur to 8,340 acres, which represent 6.57 percent of the Upper Strawberry Watershed IBA within the Region II analysis area (**Tables 3.22-42** and **3.22-46**).

Potential direct impacts to BHCAs under Alternative II-G would include construction and operation impacts to approximately 374 acres and 134 acres, respectively, of avian habitats with high conservation value. These areas represent 0.02 percent and 0.01 percent of BHCAs in the Region II analysis area. Potential indirect impacts to BHCAs under Alternative II-G would occur to 44,338 acres, which represent 2.53 percent of BHCAs within the Region II analysis area (**Tables 3.22-42** and **3.22-46**).

Table 3.22-58 presents the total potential impacts to priority habitats within IBAs and BHCAs that would occur under Alternative II-G. **Table 3.22-59** presents a summary of potential impacts to priority habitats within IBAs and BHCAs for this alternative. Also presented are acreages of each vegetation community that are co-located with existing aboveground utilities. Operational impacts such as long-term habitat fragmentation are anticipated to be reduced along co-located portions of an alternative as migratory bird habitat in these areas has already been fragmented by existing transmission lines.

Migratory Bird Species

Impacts to migratory bird species under Alternative II-G would vary in conjunction with the amount and type of habitat disturbed. **Table 3.22-41** presents the length of Alternative II-G, which provides a measure of collision potential with the transmission line and associated structures. Also presented are the length and density of existing roads, which provide a measure of collision potential with vehicles and equipment. The density of existing roads within the Region II potential disturbance areas also is an indicator of current habitat fragmentation along each alternative route.

Table 3.22-58 Alternative II-G Migratory Bird Habitat Analysis Parameters

Alternative II-G Differentiating Metrics	Total (acres)	Rank among Region II Alternatives Greatest Impact = 1 Least Impact = 7
Total Indirect Impacts to Priority Habitats	287,268	3
Total Indirect Impacts to Non-sagebrush Priority Habitats	148,299	6
Total Indirect Impacts to Wetland/Riparian/Open Water Priority Habitats	9,644	1
Total Indirect Impacts to Priority Habitats along Non-co-located Segments	166,553	7
Total Construction Impacts to Priority Habitats	2,585	7
Total Operation Impacts to Priority Habitats	743	4
Total Indirect Impacts to IBA Priority Habitats	6,483	2
Total Indirect Impacts to BHCA Priority Habitats	32,348	4
Total Length of Alternative	252 miles	7

Table 3.22-59 Alternative II-G Priority Habitat Analysis

Alternative II-G Priority Habitats	Construction Impacts to Priority Habitats (acres)	Operation Impacts to Priority Habitats (acres)	Indirect Impacts to Priority Habitats (acres)	Percentage of Existing Priority Habitats Indirectly Impacted within Region II Analysis Area	Indirect Impacts to IBA Priority Habitats (acres)	Indirect Impacts to BHCA Priority Habitats (acres)	Indirect Impacts to Priority Habitats along Non-co-located Segments[1] (acres)	Percentage of Priority Habitats along Non-co-located Segments[1]
Aspen Forest and Woodland	121	45	13,748	2.4	3,719	8,501	6,921	73
Desert Shrubland								
Grassland	214	48	25,318	4.9	–	1,348	20,217	85
Herbaceous Wetland	14	3	2,630	3.1	48	101	2,022	89
Montane Grassland	8	3	785	1.2	44	251	459	77
Montane Shrubland	282	106	28,457	4.9	31	1,915	14,733	69
Open Water	5	1	2,164	3.5	683	1,231	1,163	87
Pinyon-Juniper Woodland	621	187	70,347	2.9	–	3,259	35,506	75
Sagebrush Shrubland	1,279	337	138,969	6.1	1,905	14,739	82,773	72
Woody Riparian and Wetlands	41	13	4,850	4.3	53	1,003	2,759	72
Total	**2,585**	**743**	**287,268**		**6,483**	**32,348**	**166,553**	

[1] Non-co-located construction refers to areas that are not co-located with existing aboveground utilities.

Raptors, particularly juveniles, and other large species are particularly susceptible to collision (APLIC 2012).The number of raptor nests in proximity to Project potential disturbance areas is one indicator of habitat quality and collision potential and can be compared among alternatives. A total of 181 known raptor nests occur within 1 mile of the potential disturbance areas under Alternative II-G (**Table 3.22-42**). This total is presented by species in **Table 3.22-47.**

Table 3.22-58 presents a summary of migratory bird analysis parameters along Alternative II-G. **Table 3.22-6** presents the BCC and PIF species that could breed, forage, or winter in the Region II analysis area and could be impacted by the Project.

Design features and additional mitigation measures applicable to avoiding and minimizing impacts to migratory bird species and associated habitats are the same as those identified for Alternative I-A. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to migratory bird species and habitats would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during maintenance activities.

Strawberry IRA Micro-siting Options

TransWest has developed two potential options to avoid or minimize the crossing of national forest IRAs along Alternative II-G. These are referred to as Strawberry IRA Micro-siting Options 2 and 3. These micro-siting options would result in similar impacts to migratory bird habitat in comparison to Alternative II-G. Micro-siting Options 2 and 3 would reduce the amount of habitat fragmentation in comparison to Alternative II-G as they would be co-located adjacent to an existing transmission line for approximately 4 miles. Other differences in impacts to migratory birds and habitat are anticipated to be negligible in comparison to Alternative II-G.

Fruitland Micro-siting Options

TransWest has developed the Fruitland Micro-siting Options in consideration of impacts to greater sage-grouse habitat, private land development, and existing conservation easements. These options range from approximately 13 to 15 miles in length and would cross the same types of vegetation communities as comparable segments of Alternative II-G. Two parameters differentiate impacts to migratory bird habitat resulting from the selection of any of the Fruitland micro-siting options. These include an increase of overall Project disturbance and habitat fragmentation due to less co-located length (Options 1 and 3) and the need for larger work areas to construct two cross-overs of the existing Mona-Bonanza transmission line (Option 2). Fruitland Options 1 and 3 would result in increased disturbance to sagebrush shrubland habitat and Fruitland Option 2 would result in increased disturbance to pinyon-juniper woodland habitat. Other impacts to migratory birds and habitat resulting from these options are considered negligible in comparison to Alternative II-G.

Reservation Ridge Alternative Variation

The BLM has developed the Reservation Ridge Alternative Variation to avoid potential impacts to greater sage-grouse in the Emma Park area (**Figure 2-23**). Information regarding potential construction and operation impacts from the Reservation Ridge Alternative Variation and comparable segments of Alternative II-F are located in **Table 3.22-60.** Impacts to avian habitat resulting from this alternative variation are varied. Selection of this alternative variation would result in a minor increase of construction and operation impacts to conifer forest habitat along Reservation Ridge and a corresponding minor decrease in impacts to sagebrush shrubland habitat in Emma Park. One golden eagle nest is known to occur within 1 mile of either the Reservation Ridge Alternative Variation. No known raptor nests occur along the comparable segments of Alternative II-F (**Table 3.22-60**).

Table 3.22-60 Region II Alternative Variation Impact Parameters

Impact Parameters	Reservation Ridge Alternative Variation			Comparable Portion of Alternative II-F		
	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts
Migratory Bird Species						
Total migratory bird habitat (acres)[1]	423	142	35,994	444	143	38,086
Percentage of existing habitat within Region II analysis area	<0.01	<0.01	0.34	<0.01	<0.01	0.36
Relative Collision Potential for Migratory Birds						
Length of transmission line (miles)[2]	20			21		
Raptor Nests[3]						
Number within 1 mile of the potential disturbance areas[4]	1			–		
Bird Habitat Conservation Areas						
UT-27: Emma Park BHCA (acres)	–	–	–	–	–	1,395
Percentage of existing UT-27: Emma Park BHCA habitat within the Region II analysis area	–	–	–	–	–	0.07
Audubon Important Bird Areas						
No IBAs are within the 250-foot-wide transmission line ROW or the potential disturbance areas.						
Migratory Bird Habitat Associations						
Agricultural Land	–	–	–	–	–	–
Percentage of existing habitat within the Region II analysis area	–	–	–	–	–	–
Aspen Forest and Woodland[5]	93	30	7,858	102	32	6,766
Percentage of existing habitat within the Region II analysis area	0.02	0.01	1.35	0.02	0.01	1.17
Barren/Sparsely Vegetated	–	–	–	–	–	–
Percentage of existing habitat within the Region II analysis area	–	–	–	–	–	–
Cliff and Canyon	3	1	264	19	6	1,503
Percentage of existing habitat within the Region II analysis area	<0.01	<0.01	0.05	<0.01	<0.01	0.27
Conifer Forest	120	42	10,400	55	18	5,124
Percentage of existing habitat within the Region II analysis area	0.02	0.01	2.15	0.01	<0.01	1.06
Deciduous Forest	<1	<1	70	–	–	17
Percentage of existing habitat within the Region II analysis area	<0.01	<0.01	0.50	–	–	0.12
Desert Shrubland[5]	–	–	–	–	–	–
Percentage of existing habitat within the Region II analysis area	–	–	–	–	–	–
Dunes	–	–	–	–	–	–
Percentage of existing habitat within the Region II analysis area	–	–	–	–	–	–
Grassland[5]	–	–	–	<1	<1	1
Percentage of existing habitat within the Region II analysis area	–	–	–	<0.01	<0.01	<0.01
Greasewood Flat	–	–	–	–	–	–

Table 3.22-60 Region II Alternative Variation Impact Parameters

Impact Parameters	Reservation Ridge 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 analysis area	–	–	–	–	–	–
Herbaceous Wetland[5]	<1	<1	70	1	<1	196
Percentage of existing habitat within the Region II analysis area	<0.01	<0.01	0.08	<0.01	<0.01	0.23
Montane Grassland[5]	5	2	281	5	2	507
Percentage of existing habitat within the Region II analysis area	0.01	<0.01	0.42	0.01	<0.01	0.76
Montane Shrubland[5]	34	11	3,039	58	19	4,684
Percentage of existing habitat within the Region II analysis area	0.01	<0.01	0.53	0.01	<0.01	0.81
Open Water[5]	–	–	7	<1	<1	14
Percentage of existing habitat within the Region II analysis area	–	–	0.01	<0.01	<0.01	0.02
Pinyon/Juniper Woodland [5]	4	1	652	21	7	2,267
Percentage of existing habitat within the Region II analysis area	<0.01	<0.01	0.03	<0.01	<0.01	0.09
Sagebrush Shrubland[5]	154	51	13,316	174	57	16,903
Percentage of existing habitat within the Region II analysis area	0.01	<0.01	0.59	0.01	<0.01	0.75
Saltbush Shrubland	–	–	2	1	<1	59
Percentage of existing habitat within the Region II analysis area	–	–	<0.01	<0.01	<0.01	<0.01
Tundra	–	–	–	–	–	–
Percentage of existing habitat within the Region II analysis area	–	–	–	–	–	–
Woody Riparian and Wetlands[5]	<1	<1	33	<1	<1	45
Percentage of existing habitat within the Region II analysis area	<0.01	<0.01	0.03	<0.01	<0.01	0.04

[1] All vegetation communities and land forms defined for the Project constitute migratory bird potential habitat except the developed/disturbed community. Although the developed/disturbed land cover type is not considered to be suitable avian habitat and is not included in analyses or reported disturbance acreages, some disturbance-tolerant species utilize these areas. Further discussion of these vegetation communities is included in Section 3.5.6, Impacts to Vegetation.

[2] Length refers to length of 600-kV transmission lines and provides a measure of avian collision potential.

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

[4] Nests of unknown raptor species are tabulated in both Sections 3.8 and 3.22 because they may have been utilized by either special status or non-special status raptor

[5] Region II priority habitats, as identified in the Colorado and Utah SWAPs and PIF Bird Conservation Plans.

Alternative Connectors in Region II

If utilized, the Roan Cliffs, Castle Dale, Price, Lynndyl, and IPP East alternative connectors would include minor increases of total habitat disturbance relative to the total impacts associated with Region II alternatives. **Table 3.22-61** summarizes impacts associated with the Alternative Connectors in Region II.

Table 3.22-61 Region II Alternative Connector Impact Parameters

Alternative Connector	Analysis
Lynndyl Alternative Connector (Alternatives II-B and II-C)	• Approximately 24 miles in length.[1] • Approximately 297 acres of construction, 66 acres of operation, and 36,037 acres of indirect impacts to migratory bird potential habitat would occur. • No construction or operation impacts to IBAs would occur. • Approximately 465 acres of construction, 279 acres of operation, and 28,768 acres of indirect impacts to the Sevier Bridge/Chicken Creek BHCA would occur. • No raptor nests are within 1 mile of the potential disturbance areas.[2,3] • Acres of construction, operation, and indirect impacts to Region II priority habitats: – Approximately 4 acres of construction, 1 acre of operation, and 1,981 acres of indirect impacts to agricultural habitat would occur. – No direct and approximately 2 acres of indirect impacts to aspen forest and woodland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 28 acres of indirect impacts to cliff and canyon habitat would occur. – Approximately 70 acres of construction, 15 acres of operation, and 7,772 acres of indirect impacts to grassland habitat would occur. – Approximately 1 acre of construction, <1 acre of operation, and 87 acres of indirect impacts to greasewood flat habitat would occur. – Approximately 13 acres of construction, 3 acres of operation, and 2,664 acres of indirect impacts to montane grassland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 286 acres of indirect impacts to montane shrubland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 3 acres of indirect impacts to open water habitat would occur. – Approximately 44 acres of construction, 10 acres of operation, and 8,395 acres of indirect impacts to pinyon-juniper woodland habitat would occur. – Approximately 163 acres of construction, 35 acres of operation, and 14,342 acres of indirect impacts to sagebrush shrubland habitat would occur. – Approximately 2 acres of construction, <1 acre of operation, and 450 acres of indirect impacts to saltbush shrubland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 28 acres of indirect impacts to woody riparian and wetlands habitat would occur.
IPP East Alternative Connector (Alternatives II-A and II-B)	• Approximately 4 miles in length.[1] • Approximately 44 acres of construction, 7 acres of operation, and 6,435 acres of indirect impacts to migratory bird potential habitat would occur. • No construction or operation impacts to BHCAs or IBAs would occur. • Approximately 73 acres of indirect impacts to the Emma Park BHCA would occur. • No raptor nests are within 1 mile of the potential disturbance areas.[2,3] • Acres of construction, operation, and indirect impacts to Region II priority habitats: – Approximately 6 acres of construction, 1 acre of operation, and 1,203 acres of indirect impacts to grassland habitat would occur. – Approximately 18 acres of construction, 3 acres of operation, and 2,004 acres of indirect impacts to greasewood flat habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 16 acres of indirect impacts to pinyon-juniper woodland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 5 acres of indirect impacts to sagebrush shrubland habitat would occur. – Approximately 20 acres of construction, 3 acres of operation, and 3,207 acres of indirect impacts to saltbush shrubland habitat would occur.
Roan Cliffs Alternative Connector (Alternatives II-E and II-F)	• Approximately 2 miles in length.[1] • Approximately 32 acres of construction, 12 acres of operation, and 5,327 acres of indirect impacts to avian potential habitat would occur. • Approximately <1 acre of construction and 1,922 acres of indirect impacts to the Emma Park BHCA would occur. • No construction or operation impacts to IBAs would occur. • No raptor nests are within 1 mile of the potential disturbance areas.[2,3]

Table 3.22-61 Region II Alternative Connector Impact Parameters

Alternative Connector	Analysis
	• Acres of construction, operation, and indirect impacts to Region II priority habitats: – Approximately <1 acre of construction, <1 acre of operation, and 234 acres of indirect impacts to aspen forest and woodland habitat would occur. – Approximately 3 acres of construction, 1 acre of operation, and 353 acres of indirect impacts to cliff and canyon habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 96 acres of indirect impacts to conifer habitat would occur. – No direct and approximately 3 acres of indirect impacts to conifer habitat would occur. – No direct and approximately 5 acres of indirect impacts to herbaceous wetland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 55 acres of indirect impacts to montane grassland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 156 acres of indirect impacts to montane shrubland habitat would occur. – No direct and approximately 2 acres of indirect impacts to open water habitat would occur. – Approximately 9 acres of construction, 3 acres of operation, and 825 acres of indirect impacts to pinyon-juniper woodland habitat would occur. – Approximately 20 acres of construction, 8 acres of operation, and 3,571 acres of indirect impacts to sagebrush shrubland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 26 acres of indirect impacts to saltbush shrubland habitat would occur. – No direct and approximately 1 acre of indirect impacts to woody riparian and wetlands habitat would occur.
Castle Dale Alternative Connector	• Approximately 11 miles in length.[1] • Approximately 136 acres of construction, 27 acres of operation, and 19,420 acres of indirect impacts to avian potential habitat would occur. • No construction or operation impacts to IBAs or BHCAs would occur. • No raptor nests are within 1 mile of the potential disturbance areas.[2,3] • Acres of construction, operation, and indirect impacts to Region II priority habitats: – Approximately 22 acres of construction, 4 acres of operation, and 3,102 acres of indirect impacts to agricultural habitat would occur. – Approximately 3 acres of construction, 1 acre of operation, and 282 acres of indirect impacts to barren/sparsely vegetated habitat would occur. – Approximately 7 acres of construction, 1 acre of operation, and 1,306 acres of indirect impacts to cliff and canyon habitat would occur. – No direct and approximately 16 acres of indirect impacts to conifer forest habitat would occur. – Approximately 2 acres of construction, <1 acre of operation, and 363 acres of indirect impacts to grassland habitat would occur. – Approximately 6 acres of construction, 1 acre of operation, and 1,126 acres of indirect impacts to greasewood flat habitat would occur. – No direct and approximately 10 acres of indirect impacts to montane shrubland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 54 acres of indirect impacts to open water habitat would occur. – Approximately 7 acres of construction, 1 acre of operation, and 1,974 acres of indirect impacts to pinyon-juniper woodland habitat would occur. – Approximately 15 acres of construction, 3 acres of operation, and 2,162 acres of indirect impacts to sagebrush shrubland habitat would occur. – Approximately 71 acres of construction, 14 acres of operation, and 8,490 acres of indirect impacts to saltbush shrubland habitat would occur. – Approximately 2 acres of construction, <1 acre of operation, and 536 acres of indirect impacts to woody riparian and wetlands habitat would occur.

Table 3.22-61 Region II Alternative Connector Impact Parameters

Alternative Connector	Analysis
Price Alternative Connector	• Approximately 18 miles in length.[1] • Approximately 236 acres of construction, 60 acres of operation, and 29,340 acres of indirect impacts to avian potential habitat would occur. • Approximately 31 acres of construction, 6 acres of operation, and 2,062 acres of indirect impacts would occur to the Summerhouse Spring BHCA. • No construction or operation impacts to IBAs would occur. • A total of 18 raptor nests are within 1 mile of the potential disturbance areas.[2,3] • Acres of construction, operation, and indirect impacts to Region II priority habitats: – Approximately <1 acre of construction, <1 acre of operation, and 93 acres of indirect impacts to agricultural habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 12 acres of indirect impacts to aspen forest and woodland habitat would occur. – Approximately 2 acres of construction, <1 acre of operation, and 188 acres of indirect impacts to barren/sparsely vegetated habitat would occur. – Approximately 8 acres of construction, 3 acres of operation, and 1,696 acres of indirect impacts to cliff and canyon habitat would occur. – Approximately 1 acre of construction, <1 acre of operation, and 145 acres of indirect impacts to conifer forest habitat would occur. – Approximately 1 acre of construction, <1 acre of operation, and 352 acres of indirect impacts to grassland habitat would occur. – Approximately 2 acres of construction, 1 acre of operation, and 431 acres of indirect impacts to greasewood flat habitat would occur. – No direct and approximately 2 acres of indirect impacts to herbaceous wetland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 7 acres of indirect impacts to montane grassland habitat would occur. – Approximately 3 acres of construction, 1 acre of operation, and 763 acres of indirect impacts to montane shrubland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 6 acres of indirect impacts to open water habitat would occur. – Approximately 105 acres of construction, 26 acres of operation, and 11,544 acres of indirect impacts to pinyon-juniper woodland habitat would occur. – Approximately 101 acres of construction, 24 acres of operation, and 10,197 acres of indirect impacts to sagebrush shrubland habitat would occur. – Approximately 12 acres of construction, 4 acres of operation, and 3,786 acres of indirect impacts to saltbush shrubland habitat would occur. – Approximately 1 acre of construction, <1 acre of operation, and 119 acres of indirect impacts to woody riparian and wetlands habitat would occur.

1 Length refers to length of 600-kV transmission lines and provides a measure of avian collision potential.

2 Special status species are discussed in Section 3.8, Special Status Wildlife Species.

3 Nests of unknown raptor species are presented in both Sections 3.8 and 3.22 because they may have been utilized by either special status or non-special status raptor species.

Region II Conclusion

Based on a comparison of impact parameters for Region II alternatives, potential direct and indirect impacts to migratory bird species and habitats would be greatest for Alternative II-F, as presented in **Table 3.22-62.** Alternative II-F would result in the greatest direct impact to priority avian habitats. This is due to the fact that the largest acreage of priority habitats for migratory birds is located within the areas potentially impacted by this alternative. Alternative II-D would result in the least impact to migratory birds and habitats according to the established metrics. Alternative II-D would result in the greatest impact and

Table 3.22-62 Region II Composite Metric Rank Scores

Metric Rank among Region II Alternatives Greatest Impact = 1; Least Impact = 7	Alternative II-A	Alternative II-B	Alternative II-C	Alternative II-D	Alternative II-E	Alternative II-F	Alternative II-G
Total Indirect Impacts to Priority Habitats	4	7	6	5	2	1	3
Total Indirect Impacts to Non-sagebrush Priority Habitats	7	2	1	4	5	3	6
Total Indirect Impacts to Wetland/Riparian Priority Habitats	2	5	4	7	3	6	1
Total Indirect Impacts to Priority Habitats along Non-co-located Segments	5	6	4	2	3	1	7
Total Construction Impacts to Priority Habitats	6	5	4	3	2	1	7
Total Operation Impacts to Priority Habitats	5	6	7	3	2	1	4
Total Indirect Impacts to IBA Priority Habitats	1	7	7	7	7	7	2
Total Indirect Impacts to BHCA Priority Habitats	3	1	2	7	5	6	4
Total Length of Alternative	6	2	1	5	3	4	7
Composite Score	39	41	36	43	32	30	41

Alternative II-A would result in the least impact to known raptor nests. Alternatives II-A and II-G would result in construction and operation impacts to Audubon IBA habitat. No other Region II alternatives would impact Audubon IBA habitat. The greatest amount of BHCA priority habitats in the Region II potential disturbance would occur under Alternative II-B. The greatest amount of herbaceous wetland, open water, and woody riparian and wetland habitat in the Region II potential disturbance area would occur under Alternative II-G. For this analysis, the occurrence of priority habitats for migratory birds serves as an indicator of migratory bird use and BCC and PIF species occurrence potential in Region II. Project impacts on migratory bird, BCC, and PIF species and associated habitats would be avoided or considered to be low in magnitude and short-term in duration after implementing BMPs, design features, and additional mitigation measures (Section 3.22.6 and **Appendix C**).

A total of eight BCC and PIF species have high potential to occur within Region II priority habitats. These species have potential to occur in priority habitats present along all alternatives; thus a comparison between alternatives of this parameter is not possible. A total of 21 BCC and PIF species have moderate potential to occur within Region II priority habitats and a total of 29 BCC and PIF species have low potential to occur in Region II priority habitats. Among the BCC and PIF species that could occur in the habitats present in Region II, a total of 35 species are considered habitat obligates, both of priority and non-priority vegetation communities. These species could be disproportionately impacted by disturbance in the following habitat types, particularly relative to nesting habitat.

- Open water, herbaceous wetland, woody riparian and wetlands: eared grebe, least bittern, bald eagle, long-billed curlew, willow flycatcher, yellow warbler, and yellow-headed blackbird;
- Cliff and canyon: peregrine falcon, golden eagle, ferruginous hawk, prairie falcon, black swift, and white-throated swift;
- Grassland and montane grassland: long-billed curlew, mountain plover, short-eared owl, burrowing owl;
- Conifer and deciduous forest: flammulated owl, Lewis's woodpecker, Williamson's sapsucker, red-naped sapsucker, olive-sided flycatcher, gray jay, Steller's jay, Clark's nutcracker, Bohemian waxwing, pine grosbeak, white-winged crossbill;
- Pinyon-juniper woodland: pinyon jay, juniper titmouse, black-throated gray warbler;
- Sagebrush shrubland: sage thrasher, sage sparrow, Brewer's sparrow; and
- Tundra: black rosy-finch, brown-capped rosy-finch.

Specific criteria and rationale for the designation of IBAs and BHCAs is discussed in Section 3.22.4.1. Audubon IBAs and BHCAs serve as additional indicators of priority avian habitats across Project alternatives. **Table 3.22-42** presents impacts to the Upper Strawberry Watershed IBA and thirteen BHCAs, by alternative. The Upper Strawberry Watershed IBA would be traversed by Alternatives II-A and II-G, resulting in the same disturbance acreage for both alternatives, as presented in **Table 3.22-42.** No other IBAs would be within Region II potential disturbance areas. BHCA habitat would be traversed by all Region II alternative routes, as presented in **Table 3.22-42. Table 3.22-45** provides a summary of the acreages of priority habitats existing within IBAs and BHCAs within Region II areas analysis area. The greatest amount of IBA and BHCA priority habitats present within the analysis area is in the CO31 Roan Plateau; Piceance Creek; Cathedral Bluffs BHCA. This BHCA is within the Alternatives II-B and II-C potential disturbance areas. Alternative II-B would impact the greatest amount of BHCA habitats in comparison to other Project alternatives (**Table 3.22-46**).

Impacts from the Project to migratory birds would be expected to result primarily from habitat loss, alteration, and fragmentation. The impacts, design features, and mitigation measures described under Region I Conclusion also would apply to Region II migratory bird species. Most BCC and PIF species that occur in Region II are likely to be adversely affected by increased habitat fragmentation. In Region II, Alternative II-C would have the longest length in comparison to other Project alternatives. Therefore, it

can be concluded that Alternative II-C would pose the greatest collision risk to migratory bird species relative to other Project alternatives.

Notable Species-Specific Conclusions

Several BCC and/or PIF species were selected for additional analysis as examples from each priority habitat present in the Region II analysis area. Factors considered in this selection include whether the species is an obligate of the priority habitat, its potential for occurrence in the Region II analysis area, its state or federal status, and whether the species' geographic range is limited to the Region II analysis area rather than inclusive of other Project regions.

Aspen Forest and Woodland Species

A variety of migratory bird species inhabits the aspen forest and woodland community in Region II, including 13 BCC and PIF species. The red-naped sapsucker and flammulated owl were selected as examples for this priority habitat in Region II.

Red-naped Sapsucker

The red-naped sapsucker is a short-distance migrant and could occur in the Region II analysis area throughout the year. The species is designated as a Colorado SGCN and a PIF species of Conservation Importance. The red-naped sapsucker has low potential to breed, forage, and winter in the Region II analysis area.

The red-naped sapsucker breeds almost exclusively in mature aspen stands. Red-naped sapsuckers require aspen groves that are infected with shelf or heartwood fungus for drilling nest holes and require nearby willow cars for drilling sap wells (Barrett 1998). Threats to the red-naped sapsucker include habitat loss, alteration by fire suppression, degradation of riparian areas, competition from European starlings for nest cavities, and harvest of aspen trees. Impacts from the Project on this species would be expected to result primarily from habitat loss, alteration and fragmentation. Fragmentation of aspen forest and woodland habitat would be minimized in areas of co-location with other transmission lines. The red-naped sapsucker is considered to be a climate endangered species according to the Audubon Birds and Climate Change Report (National Audubon Society 2014) and may lose over 50 percent of its current climatic range by 2050.

Flammulated Owl

The flammulated owl is a migratory species and could occur in the Region II analysis area during the breeding season. The species is designated as Forest Sensitive, a Colorado SGCN, a Nevada SCP, a BCC, and a PIF Species of Conservation Importance. The flammulated owl has moderate potential to breed and forage in the Region II analysis area.

Flammulated owls require cavities for nesting, open forests for catching insects, and dense foliage for roosting (Winn 1998). The species primarily nests in flicker and other woodpecker cavities in aspen trees. Threats to the species include habitat loss, alteration, and fragmentation, and competition with European starlings for nest cavities. Proximity to humans increases the likelihood of secondary predation by domestic and feral cats. Pesticide contamination also is a threat to this species.

Impacts from the Project on these and other species that could utilize aspen forest and woodland habitat would be expected to result primarily from habitat loss, alteration, and fragmentation. Impacts to migratory bird habitat and species are summarized above in Region I Conclusion. The greatest amount of aspen forest and woodland habitat within the potential disturbance area occurs under Alternative II-D. A total of 5 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation. The least amount of aspen forest and woodland habitat within the potential disturbance area occurs under Alternative II-C. A total of

9 percent of this habitat occurs where this alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation.

Desert Shrubland Species

A variety of migratory bird species inhabits the desert shrubland community in Region II, including 10 BCC and PIF species. The black-throated sparrow and Scott's oriole were selected as examples for this priority habitat in Region II.

Black-throated Sparrow

The black-throated sparrow is a migratory species and could occur in the Region II analysis area during the breeding season. The species is designated as a PIF species of Conservation Importance. The black-throated sparrow has moderate potential to breed and forage in the Region II analysis area.

The black-throated sparrow prefers semi-open desert shrubland habitats. Threats to this species include habitat loss and alteration. Fire suppression has allowed high-intensity fires to destroy large tracts of desert shrubland habitat. The species experiences nest parasitism by the brown-headed cowbird (Johnson et al. 2002). Brown-headed cowbird populations would be expected to proliferate with an increase in habitat fragmentation and the associated creation of edge habitat (Lowther 1993). In addition, the cowbird utilizes tall shrubs, fences, and power lines as vantage points from which to observe nesting birds in order to deposit eggs (Johnson et al. 2002). Proximity to humans increases the likelihood of secondary predation by domestic and feral cats. The invasion of exotic annual plants, especially cheatgrass, also is a threat.

Scott's Oriole

The Scott's oriole is a migratory species and could occur in the Region II analysis area during the breeding season. The species is designated as a Nevada SCP and a PIF species of Conservation Importance. The Scott's oriole has moderate potential to breed and forage in the Region II analysis area.

The Scott's oriole prefers arid environments where trees or tall shrubs are available for nesting. Threats to the species include habitat loss, alteration, and fragmentation. The Scott's oriole experiences nest parasitism by the brown-headed cowbird (Flood 2002). Brown-headed cowbird populations would be expected to proliferate with an increase in habitat fragmentation and the associated creation of edge habitat (Lowther 1993). In addition, the cowbird utilizes tall shrubs, fences, and power lines as vantage points from which to observe nesting birds in order to deposit eggs (Johnson et al. 2002). Proximity to humans increases the likelihood of secondary predation by domestic and feral cats.

Impacts from the Project on these and other species that could utilize desert shrubland habitat would be expected to result primarily from habitat loss, alteration, and fragmentation. Impacts to migratory bird habitat and species are summarized above in Region I Conclusion. The greatest amount of desert shrubland habitat within the potential disturbance area occurs under Alternative II-C. A total of 6 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation. No desert shrubland habitat is within the potential disturbance areas under Alternatives II-A, II-D, II-E, II-F, or II-G.

Grassland Species

A variety of migratory bird species inhabits the grassland community in Region II, including 14 BCC and PIF species. The ferruginous hawk and long-billed curlew were selected as examples for this priority habitat in Region II. The ferruginous hawk is discussed in Section 3.22.6.3. The species has high potential to occur in the Region II analysis area although it is rare in Utah and productivity may not be sufficient to maintain the state's population (Sutter et al. 2005).

Long-billed Curlew

The long-billed curlew is a migratory species and could occur in the Region II analysis area during the breeding season. The species is designated as BLM sensitive in Wyoming, Colorado, and Utah, a Colorado SGCN, a Nevada SCP, a Utah SGCN-Tier II, a Wyoming SGCN-Tier II, and a BCC. The long-billed curlew is considered to be a climate endangered species according to the Audubon Birds and Climate Change Report (National Audubon Society 2014) and may lose over 50 percent of its current climatic range by 2050. The species has high potential to breed and forage in the Region II analysis area.

The long-billed curlew requires grassland habitat for nesting. Water availability, minimum home range size, vegetation height, density, structure, and species composition are all factors in suitable breeding and foraging habitat for this species. Long-billed curlew populations are declining particularly in the short-grass and mixed-grass prairies of the western Great Plains (Fellows and Jones 2009). The loss, alteration, degradation, and fragmentation of grassland habitat have altered the historical breeding distribution for the long-billed curlew. Other threats to the species include invasive plant species, predation, wind energy, grazing, cultivated agriculture, disease, pesticide contamination, collision with power lines, and nest destruction by vehicles (Fellows and Jones 2009).

Impacts from the Project on these and other species that could utilize grassland habitat would be expected to result primarily from habitat loss, alteration, and fragmentation. Impacts to migratory bird habitat and species are summarized above in Region I Conclusion. The greatest amount of grassland habitat within the potential disturbance area occurs under Alternative II-C. A total of 18 percent of this habitat occurs where this alternative would be co-located with existing aboveground utilities, reducing the amount of new habitat fragmentation. The least amount of grassland habitat within the potential disturbance area occurs under Alternative II-B. A total of 23 percent of this habitat occurs where this alternative would be co-located with existing aboveground utilities, reducing the amount of new habitat fragmentation.

Herbaceous Wetland Species

A variety of migratory bird species inhabits the herbaceous wetland community in Region II, including 7 BCC and PIF species. The least bittern and yellow-headed blackbird were selected as examples for this priority habitat in Region II. These species are discussed in Section 3.22.6.3. Both species are migratory and occur in the Region II analysis area during the breeding season. The least bittern has low potential to occur and the yellow-headed blackbird has moderate potential to occur in the Region II analysis area.

Impacts from the Project to these and other species that utilize herbaceous wetland habitat would be expected to result primarily from habitat loss, alteration, and fragmentation. Impacts to migratory bird habitat and species are summarized above in Region I Conclusion. Impacts to herbaceous wetlands would be avoided or minimized by spanning these habitats to the extent practicable. To the extent that impacts to jurisdictional wetlands are unavoidable and require a 404 permit, compensatory mitigation would be required to replace Project impacts to wetland functions, including migratory bird habitat. The greatest amount of herbaceous wetland habitat within the potential disturbance area occurs under Alternative II-E. A total of 20 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, reducing the amount of new habitat fragmentation. The least amount of herbaceous wetland habitat within the potential disturbance area occurs under Alternative II-C. A total of 17 percent of this habitat occurs where this alternative would be co-located with existing aboveground utilities, reducing the amount of new habitat fragmentation.

Montane Grassland Species

A variety of migratory bird species inhabits the montane grassland community in Region II, including 14 BCC and PIF species. The mountain plover and Swainson's hawk were selected as examples for this priority habitat in Region II.

Mountain Plover

The mountain plover is a migratory species and could occur in the Region II analysis area during the breeding season. The species is designated as BLM sensitive in Wyoming, Colorado, and Utah, USFS Sensitive, a Colorado SGCN, a Utah SGCN-Tier III, a Wyoming SGCN-Tier I, and a BCC. The mountain plover is considered to be a climate threatened species according to the Audubon Birds and Climate Change Report (National Audubon Society 2014) and may lose over 50 percent of its current climatic range by 2080. The species has moderate potential to breed and forage in the Region II analysis area.

The mountain plover is very rare and possibly extirpated in Utah (Bosworth 2003). Habitat loss, alteration, and fragmentation are the primary threats to the species. The mountain plover is often associated with prairie dog colonies. Habitat alteration by removal of primary, native grazers such as prairie dogs and bison has contributed to the decline of this species (Knopf and Wunder 2006). Proximity to humans increases the likelihood of secondary predation by domestic and feral cats. Pesticide contamination and the invasion of exotic annual plants, especially cheatgrass, also are threats (Poulin et al. 2011).

Swainson's Hawk

The Swainson's hawk is a migratory species and could occur in the Region II analysis area during the breeding season. The species is designated as a Colorado SGCN, a Wyoming SGCN-Tier II, and a BCC. The Swainson's hawk is considered to be a climate endangered species according to the Audubon Birds and Climate Change Report (National Audubon Society 2014) and may lose over 50 percent of its current climatic range by 2050. The species has high potential to breed and forage in the Region II analysis area.

The Swainson's hawk breeds and forages in arid grasslands, desert, and agricultural areas with scattered trees and shrubs. Primary threats to the species include habitat loss, alteration, and degradation, and pesticide contamination, both on the breeding and wintering grounds (Bechard et al. 2010).

Impacts from the Project on these and other species that could utilize montane grassland habitat would be expected to result primarily from habitat loss, alteration, and fragmentation. Impacts to migratory bird habitat and species are summarized above in Region I Conclusion. The greatest amount of montane grassland habitat within the potential disturbance area occurs under Alternative II-D. A total of 5 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation. The least amount of montane grassland habitat within the potential disturbance area occurs under Alternative II-C. A total of 44 percent of this habitat occurs where this alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation.

<u>Montane Shrubland Species</u>

A variety of migratory bird species inhabits the montane shrubland community in Region II, including 26 BCC and PIF species. The Virginia's warbler and green-tailed towhee were selected as examples for this priority habitat in Region II.

Virginia's Warbler

The Virginia's warbler is a migratory species and could occur in the Region II analysis area during the breeding season. The species is designated as a Colorado SGCN, a Utah SGCN-Tier III, a Nevada SCP, a BCC, and a PIF Species of Conservation Importance. The Virginia's warbler is considered to be a climate threatened species according to the Audubon Birds and Climate Change Report (National Audubon Society 2014) and may lose over 50 percent of its current climatic range by 2080. The species has moderate potential to breed and forage in the Region II analysis area and is rare in Utah (Sutter et al. 2005).

The Virginia's warbler nests in open montane shrubland and pinyon-juniper woodland habitats. Primary threats to the species include habitat loss and alteration. Brown-headed cowbird nest parasitism also is a threat (Olson and Martin 1999). Brown-headed cowbird populations would be expected to proliferate with an increase in habitat fragmentation and the associated creation of edge habitat (Lowther 1993). In addition, the cowbird utilizes tall shrubs, fences, and power lines as vantage points from which to observe nesting birds in order to deposit eggs (Johnson et al. 2002). Proximity to humans increases the likelihood of secondary predation by domestic and feral cats.

Green-tailed Towhee

The green-tailed towhee is a migratory species and could occur in the Region II analysis area during the breeding season. The species is designated as a BCC and a PIF Species of Conservation Importance. The green-tailed towhee is considered to be a climate endangered species according to the Audubon Birds and Climate Change Report (National Audubon Society 2014) and may lose over 50 percent of its current climatic range by 2050. The species has moderate potential to breed and forage in the Region II analysis area.

Primary threats to the green-tailed towhee include habitat loss, alteration, and fragmentation. Brown-headed cowbird nest parasitism also is a threat (Dobbs et al. 2012). Brown-headed cowbird populations would be expected to proliferate with an increase in habitat fragmentation and the associated creation of edge habitat (Lowther 1993). In addition, the cowbird utilizes tall shrubs, fences, and power lines as vantage points from which to observe nesting birds in order to deposit eggs (Johnson et al. 2002). Proximity to humans increases the likelihood of secondary predation by domestic and feral cats.

Impacts from the Project on these and other species that could utilize montane shrubland habitat would be expected to result primarily from habitat loss, alteration, and fragmentation. Impacts to migratory bird habitat and species are summarized above in Region I Conclusion. The greatest amount of montane shrubland habitat within the potential disturbance area occurs under Alternative II-F. A total of 33 percent of this habitat occurs where this alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation. The least amount of montane shrubland habitat within the potential disturbance area occurs under Alternative II-B. A total of 15 percent of this habitat occurs where this alternative would be co-located with existing aboveground utilities, reducing the amount of new habitat fragmentation.

Open Water Species

A variety of migratory bird species forages in and over open water habitats in Region II, including 3 BCC and PIF species. The eared grebe and bald eagle were selected as examples for this priority habitat in Region II. The bald eagle is analyzed in Section 3.8, special Status Wildlife Species. The eared grebe is discussed in Section 3.22.6.3. The eared grebe has low potential to occur and the bald eagle has high potential to occur in the Region II analysis area.

Impacts from the Project to these and other species that utilize open water habitat would be expected to result primarily from habitat loss, alteration, and fragmentation. Impacts to migratory bird habitat and species are summarized above in Region I Conclusion. Impacts to open water and surrounding vegetation would be avoided or minimized by spanning these habitats to the extent practicable. To the extent that impacts to jurisdictional wetlands are unavoidable and require a 404 permit, compensatory mitigation would be required to replace Project impacts to wetland functions, including migratory bird habitat. The greatest amount of open water habitat within the potential disturbance area occurs under Alternative II-A. A total of 8 percent of this habitat occurs where this alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation. The least amount of open water habitat within the potential disturbance area occurs under Alternative II-F. Less than 1 percent of the potential disturbance area occurs where this alternative would be co-located with existing aboveground utilities.

Pinyon-Juniper Woodland Species

A variety of migratory bird species inhabits the pinyon-juniper woodland community in Region II, including 17 BCC and PIF species. The juniper titmouse and black-throated gray warbler were selected as examples for this priority habitat in Region II.

Juniper Titmouse

The juniper titmouse is non-migratory and could occur in the Region II analysis area throughout the year. The species is designated as a Colorado SGCN, a Wyoming SGCN-Tier II, and a BCC. The juniper titmouse is considered to be a climate threatened species according to the Audubon Birds and Climate Change Report (National Audubon Society 2014) and may lose over 50 percent of its current climatic range by 2080. The species has moderate potential to inhabit the Region III analysis area.

The juniper titmouse is a cavity nester that completes its entire life cycle in pinyon-juniper woodland habitat. Primary threats to the species include habitat loss, alteration, and fragmentation (Cicero 2000). Proximity to humans increases the likelihood of secondary predation by domestic and feral cats.

Black-throated Gray Warbler

The black-throated gray warbler is a migratory species and could occur in the Region II analysis area during the breeding season. The species is designated as a Colorado SGCN, a Utah SGCN-Tier III, and a PIF Species of Conservation Importance. The black-throated gray warbler is considered to be a climate threatened species according to the Audubon Birds and Climate Change Report (National Audubon Society 2014) and may lose over 50 percent of its current climatic range by 2080. The species has moderate potential to breed and forage in the Region II analysis area.

The black-throated gray warbler is closely associated with pinyon-juniper woodland habitat. Primary threats to the black-throated gray warbler include habitat loss, alteration, and fragmentation. Brown-headed cowbird nest parasitism also is a threat (Guzy and Lowther 2012). Brown-headed cowbird populations would be expected to proliferate with an increase in habitat fragmentation and the associated creation of edge habitat (Lowther 1993). In addition, the cowbird utilizes tall shrubs, fences, and power lines as vantage points from which to observe nesting birds in order to deposit eggs (Johnson et al. 2002). Proximity to humans increases the likelihood of secondary predation by domestic and feral cats.

Impacts from the Project on these and other species that could utilize pinyon-juniper woodland habitat would be expected to result primarily from habitat loss, alteration, and fragmentation. Impacts to migratory bird habitat and species are summarized above in Region I Conclusion. The greatest amount of pinyon-juniper woodland habitat within the potential disturbance area occurs under Alternative II-C. A total of 13 percent of this habitat occurs where this alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation. The least amount of pinyon-juniper woodland habitat within the potential disturbance area occurs under Alternative II-A. A total of 25 percent of this habitat occurs where this alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation.

Sagebrush Shrubland Species

A variety of migratory bird species inhabits the sagebrush shrubland community in Region II, including 15 BCC and PIF species. The greater sage-grouse, sage sparrow, Brewer's sparrow, and sage thrasher were selected as examples for this priority habitat in Region II. The greater sage-grouse is analyzed in detail in Section 3.8, Special Status Wildlife Species and the Project Biological Assessment. The sage sparrow, sage thrasher, and Brewer's sparrow are discussed in Section 3.22.6.3. The sage thrasher has low potential to occur; the sage sparrow has high potential to occur; and the Brewer's sparrow has moderate potential to occur in the Region II analysis area.

Impacts from the Project to these and other species that could utilize sagebrush shrubland habitat would be expected to result primarily from habitat loss, alteration, and fragmentation. Impacts to migratory bird habitat and species are summarized above in Region I Conclusion. Mitigation developed to offset impacts to the greater sage-grouse would be expected to benefit other species that utilize sagebrush shrubland habitat as well. The greatest amount of sagebrush shrubland habitat within the potential disturbance area occurs under Alternative II-E. A total of 23 percent of this habitat occurs where this alternative would be co-located with existing aboveground utilities, reducing the amount of new habitat fragmentation. The least amount of sagebrush shrubland habitat within the potential disturbance area occurs under Alternative II-C. A total of 18 percent of this habitat occurs where this alternative would be co-located with existing aboveground utilities, reducing the amount of new habitat fragmentation.

Woody Riparian and Wetlands Species

A variety of migratory bird species inhabits the woody riparian and wetlands community in Region II, including 17 BCC and PIF species. The willow flycatcher and yellow warbler were selected as examples for this priority habitat in Region II. The willow flycatcher is discussed in Section 3.22.6.3. The willow flycatcher has low potential to occur in the Region II analysis area.

Yellow Warbler

The yellow warbler is a migratory species and could occur in the Region II analysis area during the breeding season. The species is designated as a BCC. The yellow warbler has moderate potential to occur in the Region II analysis area.

The yellow warbler nests and forages in wet, deciduous habitats. Primary threats to the species include habitat loss, alteration, and degradation. Brown-headed cowbird nest parasitism also is a threat (Lowther et al. 1999). Brown-headed cowbird populations would be expected to proliferate with an increase in habitat fragmentation and the associated creation of edge habitat (Lowther 1993). In addition, the cowbird utilizes tall shrubs, fences, and power lines as vantage points from which to observe nesting birds in order to deposit eggs (Johnson et al. 2002). Proximity to humans increases the likelihood of secondary predation by domestic and feral cats. The yellow warbler is a night migrant and collision with transmission towers, power lines, static wires, and guy wires is an additional threat.

Impacts from the Project to these and other species that could utilize woody riparian and wetlands habitat would be expected to result primarily from habitat loss and alteration. . Impacts to migratory bird habitat and species are summarized above in Region I Conclusion. Impacts to woody riparian and wetlands would be avoided or minimized by spanning these habitats to the extent practicable. To the extent that impacts to jurisdictional wetlands are unavoidable and require a 404 permit, compensatory mitigation would be required to replace Project impacts to wetland functions, including migratory bird habitat. The greatest amount of woody riparian and wetlands habitat within the potential disturbance area occurs under Alternative II-G. A total of 18 percent of this habitat occurs where this alternative would be co-located with existing aboveground utilities, reducing the amount of new habitat fragmentation. The least amount of woody riparian and wetlands habitat within the potential disturbance area occurs under Alternative II-D. A total of 11 percent of this habitat occurs where this alternative would be co-located with existing aboveground utilities, reducing the amount of new habitat fragmentation.

This analysis provides a comparison of the number of priority habitat types and the aggregate acreages and proportions of existing priority habitats among the Project alternatives in the Region II analysis area (**Table 3.22-63**). Alternative II-F would impact the greatest number and acreages of priority habitats in comparison to other Project alternatives. These potential impacts to priority habitats could result in localized adverse effects to migratory bird species, but are not anticipated to present an imminent threat

Table 3.22-63 Region II Alternative Rankings

Metric	Metric Rank among Region II Alternatives Greatest Impact = 1; Least Impact = 7						
	1	2	3	4	5	6	7
Total Indirect Impacts to Priority Habitats	II-F	II-E	II-G	II-A	II-D	II-C	II-B
Total Indirect Impacts to Non-sagebrush Priority Habitats	II-C	II-B	II-F	II-D	II-E	II-G	II-A
Total Indirect Impacts to Wetland/Riparian/Open Water Priority Habitats	II-G	II-A	II-E	II-C	II-B	II-F	II-D
Total Indirect Impacts to Priority Habitats along Non-co-located Segments	II-F	II-D	II-E	II-C	II-A	II-B	II-G
Total Construction Impacts to Priority Habitats	II-F	II-E	II-D	II-C	II-B	II-A	II-G
Total Operation Impacts to Priority Habitats	II-F	II-E	II-D	II-G	II-A	II-B	II-C
Total Indirect Impacts to IBA Priority Habitats	II-A	II-G	-	-	-	-	-
Total Indirect Impacts to BHCA Priority Habitats	II-B	II-C	II-A	II-G	II-E	II-F	II-D
Total Length of Alternative	II-C	II-B	II-E	II-F	II-D	II-A	II-G

to the sustainability of BCC and PIF populations within the analysis area due to the small proportion of habitats affected and the availability of priority habitat types throughout the analysis area. Discussion of the cumulative impacts of this Project in addition to other development actions is discussed in Chapter 5.0, Cumulative Impacts. Of the remaining alternatives considered, Alternative II-D would result in impacts to the lowest amount of priority habitats, according to the defined metrics.

Under all proposed Region II action alternatives and components, adverse impacts to migratory birds, including BCC and PIF species, and their habitats would occur. Impacts would vary by species according to species-specific habitat requirements. It is likely that individuals of all migratory bird species in Region II would be impacted on a temporary and short-term basis during construction. Long-term impacts would vary by species and include, but would not be limited to, the loss or conversion of habitat, increased risk of collision, increased habitat fragmentation, noxious weed invasions, and increased noise and disturbance levels from operation and maintenance activities. These impacts are likely to result in locally reduced nesting attempts and breeding success for multiple species, reduced recruitment, and avoidance of otherwise suitable habitat that has been fragmented by the Project.

3.22.6.5 Region III

Alternative III-A

Habitat Disturbance and Fragmentation

Alternative III-A would traverse approximately 276 miles of migratory bird habitat in Utah and Nevada. Approximately 186 miles (67 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.22-64**. Existing conditions within the Alternative III-A potential disturbance area relative to migratory birds can be characterized as moderately disturbed and fragmented. The section of Alternative III-A in Millard County is fragmented and disturbed by BLM maintenance roads, several county roads, oil and gas operations, and US-6. Migratory bird habitat along Alternative III-A in Beaver County is fragmented by BLM and county roads, as well as oil and gas infrastructure. Alternative III-A also would cross SR-21, an abandoned iron mine site located northeast of Milford, Utah, and a Union Pacific rail line before entering Iron County. Major causes of disturbance in Iron County include center pivot agricultural operations and oil and gas infrastructure. Alternative III-A also would cross SR-56 and a section of the Union Pacific railroad before continuing into Washington County, Utah. Alternative III-A would be co-located with existing aboveground utilities throughout Washington County and into Nevada; thereafter, disturbance and fragmentation are primarily limited to USFS roads where the route enters the mountains. Some agricultural operations, the Veyo Compressor Station (located west of Veyo, Utah) and SR-18 also contribute to habitat disturbance and fragmentation along this section of the alternative 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 increases along this portion of the alternative as the route approaches Las Vegas, Nevada and crosses I-15 several times, as well as several state highways. A total of 641 miles of existing roads (2.32 miles of existing roads per mile of alternative) are located within the Alternative III-A potential disturbance area, as presented in **Table 3.22-64**. This represents the highest existing road density and habitat fragmentation within the disturbance areas among Region III alternatives.

Table 3.22-64 Region III Existing Conditions

Alternative	Length (miles)	Length of Non-co-located Construction[1]	Length of Co-located Construction	Miles of Roads within Region III Disturbance Areas	Miles of Roads within Region III Disturbance Areas/Mile of Alternative
III-A	276	91	186	641	2.32
III-B	284	157	128	514	1.81
III-C	308	111	197	668	2.17
III-D	281	121	161	599	2.13

[1] Non-co-located construction refers to areas that are not co-located with existing aboveground utilities.

Table 3.22-65 provides a tabulation of impacts associated with the alternative routes in Region III. Key impact parameters that relate to the impact discussion in Section 3.22.6.2, Impacts Common to All Alternative Routes and Associated Components and specific differences by alternative are discussed below.

Key Parameters Summary

Migratory Bird Habitat

The types of impacts to migratory bird habitat under Alternative III-A are described in Section 3.22.6.2, Impacts Common to All Alternative Transmission Line Routes and Associated Components. Potential impacts to migratory bird species and associated habitats under Alternative III-A would include construction and operation impacts to 3,515 acres and 777 acres, respectively, of potentially suitable breeding, roosting, foraging, and winter habitats. These areas represent 0.05 percent and 0.01 percent of potentially suitable habitat within the Region III analysis area. Indirect impacts would occur to 401,813 acres, which represent 5.63 percent of potentially suitable habitat within the Region III analysis area. Region III priority habitats are denoted in **Table 3.22-65** with a footnote and include the aspen forest and woodland, cliff and canyon, desert shrubland, grassland, herbaceous wetland, montane shrubland, open water, sagebrush shrubland, saltbush shrubland, and woody riparian and wetlands vegetation communities.

IBA and BHCA Habitats

The types of impacts to IBA and BHCA habitats under Alternative III-A would be the same as those described for Alternative I-A, but would differ in the amount and type of habitat disturbed. No impacts would occur to Audubon IBAs under Alternative III-A. Potential direct impacts to BHCAs under Alternative III-A would include construction and operation impacts to approximately 275 acres and 60 acres, respectively, of avian habitats with high conservation value. These areas represent 0.06 percent and 0.01 percent of BHCAs within the Region III analysis area. Potential indirect impacts to BHCAs under Alternative III-A would occur to 24,716 acres, which represent 5.26 percent of BHCAs in the Region III analysis area (**Tables 3.22-65** and **3.22-69**).

Table 3.22-66 presents the total potential impacts to priority habitats within IBAs and BHCAs that could occur under Alternative III-A. **Table 3.22-67** presents a summary of potential impacts to priority habitats within IBAs and BHCAs for this alternative. Also presented are acreages of each vegetation community that are co-located with existing aboveground utilities. Operational impacts such as long-term habitat fragmentation would be less along co-located portions of an alternative. Priority habitats within IBAs and BHCAs in the Region III analysis area are presented in **Table 3.22-68**.

Migratory Bird Species

Impacts to migratory bird species under Alternative III-A would vary in conjunction with the amount and type of habitat that is disturbed. **Table 3.22-64** presents the length of Alternative III-A, which provides a measure of collision potential with the transmission line and associated structures. Also presented are the length and density of existing roads, which provide a measure of collision potential with vehicles and equipment. The density of existing roads within the Region III potential disturbance areas also is an indicator of current habitat fragmentation along each alternative route.

Raptors, particularly juveniles, and other large species are particularly susceptible to collision (APLIC 2012).The number of raptor nests in proximity to Project potential disturbance areas is one indicator of habitat quality and collision potential and can be compared among alternatives. A total of 319 known raptor nests occur within 1 mile of the potential disturbance areas under Alternative III-A (**Table 3.22-65**). This total is presented by species in **Table 3.22-70.**

Table 3.22-65 Region III Alternative Route Impact Parameters

Parameter	Alternative III-A			Alternative III-B			Alternative III-C			Alternative III-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
Migratory Bird Species												
Total migratory bird habitat (acres)[1]	3,515	777	401,813	3,499	686	404,795	3,733	738	436,017	3,499	666	399,691
Percentage of existing habitat within Region III analysis area	0.05	0.01	5.63	0.05	0.01	5.67	0.05	0.01	6.11	0.05	0.01	5.60
Relative Collision Potential for Migratory Birds												
Length of transmission line (miles)[2]	275			284			308			281		
Raptor Nests[3]												
Number within 1 mile of the potential disturbance area[4]	319			171			186			185		
Bird Habitat Conservation Areas												
NV-27: Lincoln BHCA (acres)	–	–	–	–	–	–	42	11	3,961	–	–	–
Percentage of existing NV-27: Lincoln BHCA within the Region III analysis area	–	–	–	–	–	–	0.03	0.01	2.69	–	–	–
NV-5: Lower Muddy River BHCA (acres)	46	13	3,485	43	8	5,841	–	–	–	43	8	5,327
Percentage of existing NV-5: Lower Muddy River within the Region III analysis area	0.05	0.01	3.44	0.04	0.01	5.76	–	–	–	0.04	0.01	5.26
NV-6: Pahranagat/Dry Lake Valley BHCA (acres)	–	–	–	–	–	–	65	9	2,444	–	–	–
Percentage of existing NV-6: Pahranagat/Dry Lake Valley within the Region III analysis area	–	–	–	–	–	–	0.22	0.03	8.12	–	–	–
UT-31: Delta BHCA (acres)	–	–	–	–	–	–	50	11	7,486	50	11	7,137

Table 3.22-65 Region III Alternative Route Impact Parameters

Parameter	Alternative III-A			Alternative III-B			Alternative III-C			Alternative III-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
Percentage of existing UT-31: Delta within the Region III analysis area	–	–	–	–	–	–	0.06	0.01	9.06	0.06	0.01	8.63
UT-47: Beaver Dam Wash BHCA (acres)	23	6	2,297	–	–	–	–	–	=	–	–	–
Percentage of existing UT-47: Beaver Dam Wash within the Region III analysis area	0.15	0.04	15.33	–	–	–	–	–	–	–	–	–
UT-48: Virgin River BHCA (acres)	206	41	18,934	–	–	–	–	–	–	–	–	–
Percentage of existing UT-48: Virgin River within the Region III analysis area	0.22	0.04	20.13	–	–	–	–	–	–	–	–	–
Important Bird Areas												
Pahranagat Valley Complex IBA (acres)	–	–	–	–	–	–	6	1	416	–	–	–
Percentage of existing IBA habitat within the Region III analysis area	–	–	–	–	–	–	0.11	0.02	7.79	–	–	–
Migratory Bird Habitat Associations												
Agricultural Land	4	1	3,008	6	1	1,257	3	1	777	6	1	1,257
Percentage of existing habitat within the Region III analysis area	0.01	<0.01	4.33	0.01	<0.01	1.81	0.00	<0.01	1.12	0.01	<0.01	1.81
Aspen Forest and Woodland[5]	–	–	10	–	–	–	–	–	–	–	–	–
Percentage of existing habitat within the Region III analysis area	–	–	0.13	–	–	–	–	–	–	–	–	–
Barren/Sparsely Vegetated	16	4	1,372	7	2	1,303	2	–	1,034	7	2	1,303
Percentage of existing habitat within the Region III analysis area	0.05	0.01	4.68	0.02	0.01	4.44	0.01	–	3.53	0.02	0.01	4.44
Cliff and Canyon[5]	24	7	2,981	7	2	1,903	24	6	6,560	6	2	1,868

Table 3.22-65 Region III Alternative Route Impact Parameters

Parameter	Alternative III-A			Alternative III-B			Alternative III-C			Alternative III-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
Percentage of existing habitat within the Region III analysis area	0.01	<0.01	1.82	<0.01	<0.01	1.16	0.01	<0.01	4.00	<0.01	<0.01	1.14
Desert Shrubland[5]	1219	323	135,527	872	166	109,730	1101	224	108,727	872	166	109,730
Percentage of existing habitat within the Region III analysis area	0.05	0.01	6.08	0.04	0.01	4.93	0.05	0.01	4.88	0.04	0.01	4.93
Dunes	–	–	–	23	5	3,433	23	5	3,433	23	5	3,433
Percentage of existing habitat within the Region III analysis area	–	–	–	0.15	0.03	22.42	0.15	0.03	22.42	0.15	0.03	22.42
Ephemeral Wash	46	13	5,613	52	9	6,193	11	2	1,038	52	9	6,193
Percentage of existing habitat within the Region III analysis area	0.07	0.02	8.61	0.08	0.01	9.50	0.02	<0.01	1.59	0.08	0.01	9.50
Grassland[5]	531	100	66,296	574	110	68,903	558	105	68,697	492	87	57,902
Percentage of existing habitat within the Region III analysis area	0.07	0.01	8.28	0.07	0.01	8.60	0.07	0.01	8.58	0.06	0.01	7.23
Greasewood Flat	241	40	25,909	258	46	27,586	313	49	35,516	307	48	34,713
Percentage of existing habitat within the Region III analysis area	0.09	0.01	9.45	0.09	0.02	10.07	0.11	0.02	12.96	0.11	0.02	12.67
Herbaceous Wetland[5]	68	10	5,528	69	11	6,916	79	15	10,325	56	9	7,108
Percentage of existing habitat within the Region III analysis area	0.08	0.01	6.76	0.08	0.01	8.46	0.10	0.02	12.63	0.07	0.01	8.70
Montane Grassland	1	–	127	1	0	119	1	–	127	1	0.1	127
Percentage of existing habitat within the Region III analysis area	0.08	–	9.90	0.08	–	9.29	0.08	–	9.90	0.04	0.01	9.90
Montane Shrubland[5]	17	4	2,103	163	37	11,646	–	–	30	163	37	11,645
Percentage of existing habitat within the Region III analysis area	0.01	<0.01	1.12	0.09	0.02	6.23	–	–	0.02	0.09	0.02	6.23
Open Water[5]	2	1	414	2	0	385	1	–	66	1	–	159

Table 3.22-65 Region III Alternative Route Impact Parameters

Parameter	Alternative III-A			Alternative III-B			Alternative III-C			Alternative III-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
Percentage of existing habitat within the Region III analysis area	0.02	0.01	3.39	0.02	–	3.15	0.01	–	0.54	0.01	–	1.30
Pinyon/Juniper Woodland	223	56	27,126	261	64	28,620	216	48	24,533	261	64	28,579
Percentage of existing habitat within the Region III analysis area	0.02	–	2.10	0.02	–	2.21	0.02	–	1.90	0.02	–	2.21
Sagebrush Shrubland[5]	606	132	61,191	655	130	68,892	803	169	97,471	637	127	67,886
Percentage of existing habitat within the Region III analysis area	0.05	0.01	5.13	0.05	0.01	5.77	0.07	0.01	8.17	0.05	0.01	5.69
Saltbush Shrubland[5]	504	84	63,120	518	96	65,515	593	112	76,804	520	91	65,246
Percentage of existing habitat within the Region III analysis area	0.08	0.01	9.93	0.08	0.02	10.31	0.09	0.02	12.09	0.08	0.01	10.27
Tundra	–	–	–	–	–	–	–	–	–	–	–	–
Percentage of existing habitat within the Region III analysis area	–	–	–	–	–	–	–	–	–	–	–	–
Woody Riparian and Wetlands[5]	14	4	1,477	31	6	2,392	5	1	878	31	7	2,541
Percentage of existing habitat within the Region III analysis area	0.03	0.01	2.72	0.06	0.01	4.40	0.01	<0.01	1.61	0.06	0.01	4.67

[1] All vegetation communities and land forms defined for the Project constitute migratory bird potential habitat except the developed/disturbed community. Although the developed/disturbed land cover type is not considered to be suitable avian habitat and is not included in analyses or reported disturbance acreages, some disturbance-tolerant species utilize these areas. Further discussion of these vegetation communities is included in Section 3.5.6, Impacts to Vegetation.

[2] Length refers to length of 600-kV transmission lines and provides a measure of avian collision potential.

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

[4] Nests of unknown raptor species are tabulated in both Sections 3.8 and 3.22 because they may have been utilized by either special status or non-special status raptor species.

[5] Region III priority habitats, as identified in the Utah and Nevada SWAPs and PIF Bird Conservation Plans.

Table 3.22-66 Alternative III-A Migratory Bird Habitat Analysis Parameters

Alternative III-A Differentiating Metrics	Total (acres)	Rank among Region III Alternatives Greatest Impact = 1 Least Impact = 4
Total Indirect Impacts to Priority Habitats	338,648	2
Total Indirect Impacts to Non-sagebrush Priority Habitats	277,457	1
Total Indirect Impacts to Wetland/Riparian/Open Water Priority Habitats	7,419	4
Total Indirect Impacts to Priority Habitats along Non-co-located Segments	255,467	3
Total Construction Impacts to Priority Habitats	2,969	2
Total Operation Impacts to Priority Habitats	659	1
Total Indirect Impacts to IBA Priority Habitats	–	4
Total Indirect Impacts to BHCA Priority Habitats	17,927	1
Total Length of Alternative	276 miles	4

Table 3.22-67 Alternative III-A Priority Habitat Analysis

Alternative III-A Priority Habitats	Construction Impacts to Priority Habitats (acres)	Operation Impacts to Priority Habitats (acres)	Indirect Impacts to Priority Habitats (acres)	Percentage of Existing Priority Habitats Indirectly Impacted within Region III Analysis Area	Indirect Impacts to IBA Priority Habitats (acres)	Indirect Impacts to BHCA Priority Habitats (acres)	Indirect Impacts to Priority Habitats along Non-co-located Segments[1] (acres)	Percentage of Priority Habitats along Non-co-located Segments[1]
Aspen Forest and Woodland	–	–	10	0.1	–	–	10	100
Cliff and Canyon	24	7	2,981	1.8	–	690	2,734	92
Desert Shrubland	1,219	323	135,527	6.1	–	11,963	109,853	81
Grassland	531	100	66,296	8.3	–	356	50,656	76
Herbaceous Wetland	68	10	5,528	6.8	–	261	4,317	78
Montane Shrubland	1	<1	2,103	1.1	–	1,165	1,519	72
Open Water	2	1	414	3.4	–	–	368	89
Sagebrush Shrubland	606	132	61,191	5.1	–	2,884	39,599	65
Saltbush Shrubland	504	84	63,120	9.9	–	106	45,065	71
Woody Riparian and Wetlands	14	4	1,477	2.7	–	503	1,347	91
Total	**2,969**	**659**	**338,648**		**0**	**17,927**	**255,467**	

[1] Non-co-located construction refers to areas that are not co-located with existing aboveground utilities.

Table 3.22-68 Region III Priority Habitats within IBAs and BHCAs in the Region III Analysis Area

Priority Habitat	Pahranagat Valley Complex IBA (acres)	NV-27 Lincoln BHCA (acres)	NV-5 Lower Muddy River BHCA (acres)	NV-6: Pahranagat Dry Lake Valley BHCA (acres)	UT-31 Delta BHCA (acres)	UT-47 Beaver Dam Wash BHCA (acres)	UT-48 Virgin River BHCA (acres)
Aspen Forest and Woodland							
Cliff And Canyon	70	31	3,244	142	3	846	2,533
Desert Shrubland	3,464	–	55,215	8,393	–	13,862	32,123
Grassland	23	878	3,058	670	2,140	40	4,298
Herbaceous Wetland	23	2,284	336	6,561	10,509	20	546
Montane Shrubland	–	565	1,942	–	–	–	3,297
Open Water	716	–	7,724	716	184	–	188
Sagebrush Shrubland	–	92,474	6,259	–	510	–	9,766
Saltbush Shrubland	36	22,795	1,694	6,980	10,561	43	259
Woody Riparian and Wetlands	754	341	5,947	3,354	2,038	15	2,961
Total	**5,338**	**119,368**	**85,418**	**26,817**	**25,945**	**14,826**	**55,970**

Table 3.22-69 Region III Impacts to IBA and BHCA Habitats

IBA/BHCA	Alternative III-A (acres)			Alternative III-B (acres)			Alternative III-C (acres)			Alternative III-D (acres)		
	Construction	Operation	Indirect	Construction	Operation	Indirect	Construction	Operation	Indirect	Construction	Operation	Indirect
Pahranagat Valley Complex IBA	–	–	–	–	–	–	6	1	416	–	–	–
NV-27: Lincoln BHCA	–	–	–	–	–	–	42	11	3,961	–	–	–
NV-5: Lower Muddy River BHCA	46	13	3,485	43	8	5,841	–	–	–	43	8	5,327
NV-6: Pahranagat/Dry Lake Valley BHCA	–	–	–	–	–	–	65	9	2,444	–	–	–
UT-31: Delta BHCA	–	–	–	–	–	–	50	11	7,486	50	11	7,137
UT-47: Beaver Dam Wash BHCA	23	6	2,297	–	–	–	–	–	–	–	–	–
UT-48: Virgin River BHCA	206	41	18,934	–	–	–	–	–	–	–	–	–
Total	**275**	**60**	**24,716**	**43**	**8**	**5,841**	**163**	**32**	**14,307**	**93**	**19**	**12,464**

Table 3.22-70 Region III Raptor Nests Within 1 mile of Potential Disturbance Areas

Species	Alternative III-A	Alternative III-B	Alternative III-C	Alternative III-D	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	Arrowhead Alternative Connector
Osprey	1	–	–	–	–	–	1	1	1	–	–	–
Red-tailed Hawk	16	8	7	8	–	–	4	1	6	–	–	–
Ferruginous Hawk	32	16	16	16	–	–	–	–	2	2	–	–
Golden Eagle	18	16	20	19	–	–	–	2	2	–	–	–
American Kestrel	–	–	1	–	–	–	–	–	–	–	–	–
Prairie Falcon	6	4	5	5	–	–	–	–	1	–	–	–
Great Horned Owl	2	1	–	–	–	–	–	–	–	–	–	–
Burrowing Owl	7	7	7	7	–	–	–	–	–	–	–	–
Long-eared Owl	1	–	–	–	–	–	–	–	1	–	–	–
Common Raven	93	44	51	51	–	–	2	0	5	4	–	–
Unknown Raptor Species	143	75	79	79	1	1	11	5	48	1	–	–
Total	**319**	**171**	**186**	**185**	**1**	**1**	**18**	**9**	**66**	**7**	**–**	**–**

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

Table 3.22-6 presents the BCC and PIF species that could nest, forage, or winter in the Region III analysis area and could be impacted by the Project. **Table 3.22-66** presents a summary of migratory bird analysis parameters along Alternative III-A.

Design features and additional mitigation measures applicable to avoiding and minimizing impacts to migratory bird species and associated habitats are the same as those identified for Alternative I-A. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to migratory bird species and habitats would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during maintenance activities.

Alternative III-B

Habitat Disturbance and Fragmentation

Alternative III-B would traverse approximately 284 miles of migratory bird habitat in Utah and Nevada. Approximately 128miles (45 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.22-64**. Existing conditions within the Alternative III-B potential disturbance areas relative to migratory birds can be characterized as moderately disturbed and fragmented. The section of Alternative III-B in Millard County is fragmented and disturbed by BLM maintenance roads, several county roads, oil and gas operations, and US-6/US-50. Migratory bird habitat along Alternative III-B in Beaver County is moderately fragmented by BLM and county roads, as well as oil and gas infrastructure. Alternate III-B also would cross SR-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 center pivot agricultural operations, ranches, and county roads. Alternative III-B also would cross SR-56 and a section of the Union Pacific railroad that parallels the potential disturbance areas from Sun Valley, Utah, to Lincoln County, Nevada. A Union Pacific rail line continues within the

Alternative III-B potential disturbance areas for approximately 16 miles into Nevada, where it heads west at Barclay. 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 increases along this section as Alternative III-B enters Clark County and intersects SR-168 at Moapa Town, Nevada. As Alternative III-B approaches Las Vegas, Nevada, the potential disturbance areas cross I-15 several times, as well as smaller state highways and metropolitan roadways. A total of 514 miles of existing roads (1.81 miles of existing roads per mile of alternative) are located within the Alternative III-B potential disturbance areas, as presented in **Table 3.22-64**. This represents the lowest existing road density and habitat fragmentation within the disturbance areas among Region III alternatives.

Key Parameters Summary

Migratory Bird Habitat

The types of impacts to migratory bird habitat under Alternative III-B are described in Section 3.22.6.2, Impacts Common to All Alternative Transmission Line Routes and Associated Components. Potential impacts to migratory bird species and associated habitats under Alternative III-B would include construction and operation impacts to 3,499 acres and 686 acres, respectively, of potentially suitable avian breeding, roosting, foraging, and winter habitat. These areas represent 0.05 percent and 0.01 percent of potentially suitable habitat within the Region III analysis area. Indirect impacts would occur to 404,795 acres, which represent 5.67 percent of potentially suitable habitat within the Region III analysis area. Region III priority habitats are denoted in **Table 3.22-65** with a footnote and include the aspen forest and woodland, cliff and canyon, desert shrubland, grassland, herbaceous wetland, montane shrubland, open water, sagebrush shrubland, saltbush shrubland, and woody riparian and wetlands vegetation communities.

IBA and BHCA Habitats

The types of impacts to IBA and BHCA habitats under Alternative III-B would be the same as those described for Alternative I-A, but would differ in the amount and type of habitat disturbed. No impacts would occur to IBAs under Alternative III-B. Potential direct impacts to BHCAs under Alternative III-B would include construction and operation impacts to 43 acres and 8 acres, respectively, of avian habitats with high conservation value. These areas represent 0.01 percent and <0.01 percent of BHCAs within the Region III analysis area. Potential indirect impacts to BHCAs under Alternative III-B would occur to 5,841 acres, which represent 1.24 percent of BHCAs in the Region III analysis area (**Tables 3.22-65** and **3.22-69**).

Table 3.22-71 presents the total potential impacts to priority habitats within IBAs and BHCAs that would occur under Alternative III-B. **Table 3.22-72** presents a summary of potential impacts to priority habitats within IBAs and BHCAs for this alternative. Also presented are acreages of each vegetation community that are co-located with existing aboveground utilities. Operational impacts such as long-term habitat fragmentation are anticipated to be reduced along co-located portions of an alternative as migratory bird habitat in these areas has already been fragmented by existing transmission lines.

Migratory Bird Species

Impacts to migratory bird species under Alternative III-B would vary in conjunction with the amount and type of habitat disturbed. **Table 3.22-64** presents the length of Alternative III-B, which provides a measure of collision potential with the transmission line and associated structures. Also presented are the length and density of existing roads, which provide a measure of collision potential with vehicles and equipment. The density of existing roads within the Region III potential disturbance areas also is an indicator of current habitat fragmentation along each alternative route.

Table 3.22-71 Alternative III-B Migratory Bird Habitat Analysis Parameters

Alternative III-B Differentiating Metrics	Total (acres)	Rank among Region III Alternatives Greatest Impact = 1 Least Impact = 4
Total Indirect Impacts to Priority Habitats	336,283	3
Total Indirect Impacts to Non-sagebrush Priority Habitats	267,391	3
Total Indirect Impacts to Wetland/Riparian/Open Water Priority Habitats	9,693	3
Total Indirect Impacts to Priority Habitats along Non-co-located Segments	279,787	1
Total Construction Impacts to Priority Habitats	2,891	3
Total Operation Impacts to Priority Habitats	560	3
Total Indirect Impacts to IBA Priority Habitats	2,444	1
Total Indirect Impacts to BHCA Priority Habitats	4,503	4
Total Length of Alternative	284 miles	2

Table 3.22-72 Alternative III-B Priority Habitat Analysis

Alternative III-B Priority Habitats	Construction Impacts to Priority Habitats (acres)	Operation Impacts to Priority Habitats (acres)	Indirect Impacts to Priority Habitats (acres)	Percentage of Existing Priority Habitats Indirectly Impacted within Region III Analysis Area	Indirect Impacts to IBA Priority Habitats (acres)	Indirect Impacts to BHCA Priority Habitats (acres)	Indirect Impacts to Priority Habitats along Non-co-located Segments[1] (acres)	Percentage of Priority Habitats along Non-co-located Segments[1]
Aspen Forest and Woodland								
Cliff and Canyon	7	2	1,903	1.2	–	50	1,742	92
Desert Shrubland	872	166	109,730	4.9	–	3,926	83,378	76
Grassland	574	110	68,903	8.6	–	0	57,161	83
Herbaceous Wetland	69	11	6,916	8.5	25	41	6,062	88
Montane Shrubland	163	37	11,646	6.2	–	–	11,646	100
Open Water	2	<1	385	3.2	2,399	85	261	68
Sagebrush Shrubland	655	130	68,892	5.8	–	–	63,508	92
Saltbush Shrubland	518	96	65,515	10.3	–	68	53,864	82
Woody Riparian and Wetlands	31	7	2,392	4.4	20	333	2,165	91
Total	**2,891**	**560**	**336,283**		**2,444**	**4,503**	**279,787**	

[1] Non-co-located construction refers to areas that are not co-located with existing aboveground utilities.

Raptors, particularly juveniles, and other large species are particularly susceptible to collision (APLIC 2012).The number of raptor nests in proximity to Project potential disturbance areas is one indicator of habitat quality and collision potential and can be compared among alternatives. A total of 171 known raptor nests occur within 1 mile of the potential disturbance areas under Alternative III-B (**Table 3.22-65**). This total is presented by species in **Table 3.22-70**.

Table 3.22-6 presents the BCC and PIF species that could breed, forage, or winter in the Region III analysis area and could be impacted by the Project. **Table 3.22-71** presents a summary of migratory bird analysis parameters along Alternative III-B.

Design features and additional mitigation measures applicable to avoiding and minimizing impacts to migratory bird species and associated habitats are the same as those identified for Alternative I-A. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to migratory bird species and habitats would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during maintenance activities.

Alternative III-C

Habitat Disturbance and Fragmentation

Alternative III-C would cross approximately 308 miles of migratory bird habitat in Utah and Nevada. Approximately 197 miles (64 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.22-64**. Existing conditions within the Alternative III-C potential disturbance areas relative to migratory birds can be characterized as moderately disturbed and fragmented. The section of Alternative III-C in Millard County is fragmented and disturbed by BLM maintenance roads, several county roads, oil and gas operations, and US-6. Migratory bird habitat along Alternative III-C in Beaver County is moderately fragmented by BLM and county roads, as well as oil and gas infrastructure. Alternative III-C also would cross SR-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 center pivot agricultural operations, ranches, and county roads. Alternative III-C also would cross SR-56 and a section of the Union Pacific railroad that parallels the potential disturbance areas from Sun Valley, Utah, to the boundary of Lincoln County, Nevada. Alternative III-C would parallel US-93 for the majority of this section. 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. Alternative III-C would continue to parallel US-93 until infrastructure from Las Vegas, Nevada (I-15, Harry Allen Generating Station, Silverhawk Generating Station and Power Plant) is nearly continuous to the terminus of Alternative III-C just north of the city. A total of 668 miles of existing roads (2.17 miles of existing roads per mile of alternative) are located within the Alternative III-C disturbance areas, as presented in **Table 3.22-64**. This represents the second highest existing road density and habitat fragmentation within the disturbance areas among Region III alternatives.

Key Parameters Summary

Migratory Bird Habitat

The types of impacts to migratory bird habitat under Alternative III-C are described in Section 3.22.6.2, Impacts Common to All Alternative Transmission Line Routes and Associated Components. Potential impacts to migratory bird species and associated habitats under Alternative III-C would include construction and operation impacts to 3,733 acres and 738 acres, respectively, of potentially suitable breeding, roosting, foraging, and winter habitat. These areas represent 0.05 percent and 0.01 percent of potentially suitable habitat within the Region III analysis area. Indirect impacts would occur to 436,017 acres, which represent 6.11 percent of potentially suitable habitat within the Region III analysis area. Region III priority habitats are denoted in **Table 3.22-65** with a footnote and include the aspen forest and woodland, cliff and canyon, desert shrubland, grassland, herbaceous wetland, montane

shrubland, open water, sagebrush shrubland, saltbush shrubland, and woody riparian and wetlands vegetation communities.

IBA and BHCA Habitats

The types of impacts to IBA and BHCA habitats under Alternative III-C would be the same as those described for Alternative I-A, but would differ in the amount and type of habitat disturbed. Potential direct impacts to IBAs under Alternative III-C would include construction and operation impacts to approximately 6 acres and 1 acre, respectively, of high quality avian habitats within the Pahranagat Valley Complex IBA. These areas represent 0.11 percent and 0.02 percent of the Pahranagat Valley Complex IBA within the Region III analysis area. Potential indirect impacts to IBAs under Alternative III-C would occur to 416 acres, which represent 7.79 percent of the Pahranagat Valley Complex IBA within the Region III analysis area (**Tables 3.22-65 and 3.22-69**).

Potential direct impacts to BHCAs under Alternative III-C would include construction and operation impacts to approximately 115 acres and 20 acres, respectively, of avian habitats with high conservation value. These areas represent 0.02 percent and <0.01 percent of BHCAs within the Region III analysis area. Potential indirect impacts to BHCAs under Alternative III-C would occur to 9,930 acres, which represent 2.11 percent of BHCAs within the Region III analysis area (**Tables 3.22-65** and **3.22-69**).

Table 3.22-73 presents the total potential impacts to priority habitats within IBAs and BHCAs that would occur under Alternative III-C. **Table 3.22-74** presents a summary of potential impacts to priority habitats within IBAs and BHCAs for this alternative. Also presented are acreages of each vegetation community that are co-located with existing aboveground utilities. Operational impacts such as long-term habitat fragmentation are anticipated to be reduced along co-located portions of an alternative as migratory bird habitat in these areas has already been fragmented by existing transmission lines.

Migratory Bird Species

Impacts to migratory bird species under Alternative III-C would vary in conjunction with the amount and type of habitat disturbed. **Table 3.22-64** presents the length of Alternative III-C, which provides a measure of collision potential with the transmission line and associated structures. Also presented are the length and density of existing roads, which provide a measure of collision potential with vehicles and equipment. The density of existing roads within the Region III potential disturbance areas also is an indicator of current habitat fragmentation along each alternative route.

Raptors, particularly juveniles, and other large species are particularly susceptible to collision (APLIC 2012). The number of raptor nests in proximity to Project potential disturbance areas is one indicator of habitat quality and collision potential and can be compared among alternatives. A total of 186 known raptor nests occur within 1 mile of the potential disturbance areas under Alternative III-C (**Table 3.22-65**). This total is presented by species in **Table 3.22-70.**

Table 3.22-6 presents the BCC and PIF species that could breed, forage, or winter in the Region III analysis area and could be impacted by the Project. **Table 3.22-73** presents a summary of migratory bird analysis parameters along Alternative III-C.

Design features and additional mitigation measures applicable to avoiding and minimizing impacts to migratory bird species and associated habitats are the same as those identified for Alternative I-A. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to migratory bird species and habitats would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during maintenance activities.

Table 3.22-73 Alternative III-C Migratory Bird Habitat Analysis Parameters

Alternative III-C Differentiating Metrics	Total (acres)	Rank among Region III Alternatives Greatest Impact = 1 Least Impact = 4
Total Indirect Impacts to Priority Habitats	369,558	1
Total Indirect Impacts to Non-sagebrush Priority Habitats	272,086	2
Total Indirect Impacts to Wetland/Riparian/Open Water Priority Habitats	11,269	1
Total Indirect Impacts to Priority Habitats along Non-co-located Segments	274,435	2
Total Construction Impacts to Priority Habitats	3,164	1
Total Operation Impacts to Priority Habitats	633	2
Total Indirect Impacts to IBA Priority Habitats	2,444	1
Total Indirect Impacts to BHCA Priority Habitats	8,472	2
Total Length of Alternative	308 miles	1

Table 3.22-74 Alternative III-C Priority Habitat Analysis

Alternative III-C Priority Habitats	Construction Impacts to Priority Habitats (acres)	Operation Impacts to Priority Habitats (acres)	Indirect Impacts to Priority Habitats (acres)	Percentage of Existing Priority Habitats Indirectly Impacted within Region III Analysis Area	Indirect Impacts to IBA Priority Habitats (acres)	Indirect Impacts to BHCA Priority Habitats (acres)	Indirect Impacts to Priority Habitats along Non–co–located Segments[1] (acres)	Percentage of Priority Habitats along Non–co–located Segments[1]
Aspen Forest and Woodland								
Cliff and Canyon	24	6	6,560	4.0	–	132	5,870	90
Desert Shrubland	1,101	224	108,727	4.9	–	2,329	60,409	56
Grassland	558	105	68,697	8.6	–	188	52,267	76
Herbaceous Wetland	79	15	10,325	12.6	25	1,266	7,649	74
Montane Shrubland	<1	–	30	<.1	–	–	30	100
Open Water	1	<1	66	0.5	2,399	–	34	51
Sagebrush Shrubland	803	169	97,471	8.2	–	2,662	88,620	91
Saltbush Shrubland	593	112	76,804	12.1	–	1,771	58,897	77
Woody Riparian and Wetlands	5	1	878	1.6	20	125	659	75
Total	**3,164**	**633**	**369,558**		**2,444**	**8,472**	**274,435**	

[1] Non-co-located construction refers to areas that are not co-located with existing aboveground utilities.

Alternative III-D

Habitat Disturbance and Fragmentation

Alternative III-D would traverse approximately 281 miles of migratory bird habitat in Utah and Nevada. Approximately 161 miles (57 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.22-64**. Existing conditions within the Alternative III-D potential disturbance areas relative to migratory birds can be characterized as moderately disturbed and fragmented. The section of Alternative III-D in Millard County is fragmented and disturbed by BLM maintenance roads, several county roads, oil and gas operations, and US-6/US-50. Migratory bird habitat along Alternative III-D in Beaver County is moderately fragmented by BLM and county roads, as well as oil and gas infrastructure. Alternate III-D also would cross SR-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 center pivot agricultural operations, ranches, and county roads. Alternative III-D also would cross SR-56 and a section of the Union Pacific railroad that parallels the potential disturbance areas from Sun Valley, Utah, to Lincoln County, Nevada. A Union Pacific rail line continues within the Alternative III-D potential disturbance areas for approximately 16 miles into Nevada, where it heads west at Barclay. The remaining segments of Alternative III-D through Nevada are moderately fragmented by county roads, low density oil and gas and livestock operations, and private residences. However, disturbance increases along this section as Alternative III-D enters Clark County and intersects SR-168 at Moapa Town, Nevada. As Alternative III-D approaches Las Vegas, Nevada, the potential disturbance areas cross I-15 several times, as well as smaller state highways and metropolitan roadways. A total of 599 miles of existing roads (2.13 miles of existing roads per mile of alternative) are located within the Alternative III-D potential disturbance areas, as presented in **Table 3.22-64**. Alternative III-D represents the lowest existing road density and habitat fragmentation within the disturbance areas among Region III alternatives.

Key Parameters Summary

Migratory Bird Habitat

The types of impacts to migratory bird habitat under Alternative III-D are described in Section 3.22.6.2, Impacts Common to All Alternative Transmission Line Routes and Associated Components. Potential impacts to migratory bird species and associated habitats under Alternative III-D would include construction and operation impacts to 3,499 acres and 666 acres, respectively, of potentially suitable breeding, roosting, foraging, and winter habitats. These areas represent 0.05 percent and 0.01 percent of potentially suitable habitat within the Region III analysis area. Indirect impacts would occur to 399,691 acres, which represent 5.60 percent of potentially suitable habitat within the Region III analysis area. Region III priority habitats are denoted in **Table 3.22-65** with a footnote and include the aspen forest and woodland, cliff and canyon, desert shrubland, grassland, herbaceous wetland, montane shrubland, open water, sagebrush shrubland, saltbush shrubland, and woody riparian and wetlands vegetation communities.

IBA and BHCA Habitats

The types of impacts to IBA and BHCA habitats under Alternative III-D would be the same as those described for Alternative I-A, but would differ in the amount and type of habitat disturbed. No IBAs would be impacted under Alternative III-D. Potential direct impacts to BHCAs under Alternative III-D would include construction and operation impacts to approximately 93 acres and 19 acres, respectively, of avian habitats with high conservation value. These areas represent 0.02 percent and <0.01 percent of BHCAs in the Region III analysis area. Potential indirect impacts to BHCAs under Alternative III-D would occur to 12,464 acres, which represent 2.65 percent of BHCAs within the Region III analysis area (**Tables 3.22-65** and **3.22-69**).

Table 3.22-75 presents the total potential impacts to priority habitats within IBAs and BHCAs under Alternative III-D. **Table 3.22-76** presents a summary of impacts to priority habitats within IBAs and BHCAs for this alternative. Also presented are acreages of each vegetation community that are co-located with existing aboveground utilities. Operational impacts such as long-term habitat fragmentation are anticipated to be reduced along co-located portions of an alternative as migratory bird habitat in these areas has already been fragmented by existing transmission lines.

Migratory Bird Species

Impacts to migratory bird species under Alternative III-D would vary in conjunction with the amount and type of habitat that is disturbed. **Table 3.22-64** presents the length of Alternative III-D, which provides a measure of collision potential with the transmission line and associated structures. Also presented are the length and density of existing roads, which provide a measure of collision potential with vehicles and equipment. The density of existing roads within the Region III potential disturbance areas also is an indicator of current habitat fragmentation along each alternative route.

Raptors, particularly juveniles, and other large species are particularly susceptible to collision (APLIC 2012).The number of raptor nests in proximity to Project potential disturbance areas is one indicator of habitat quality and collision potential and can be compared among alternatives. A total of 185 known raptor nests occur within 1 mile of the potential disturbance areas under Alternative III-D (**Table 3.22-65**). This total is presented by species in **Table 3.22-70.**

Table 3.22-6 presents the BCC and PIF species that could breed, forage, or winter in the Region III analysis area and could be impacted by the Project. **Table 3.22-75** presents a summary of migratory bird analysis parameters along Alternative III-D.

Design features and additional mitigation measures applicable to avoiding and minimizing impacts to migratory bird species and associated habitats are the same as those identified for Alternative I-A. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to migratory bird species and habitats would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during maintenance activities.

Alternative Variations in Region III

Table 3.22-77 summarizes impacts associated with the alternative variations in Region III. Impacts to migratory bird 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 and type of habitat disturbed. After considering design features and mitigation measures, impacts to migratory bird species from construction and operation of Region III alternative variations would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during maintenance activities.

Alternative Connectors in Region III

The Moapa, Avon, and Arrowhead 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 3.22-78** summarizes impacts associated with the alternative connectors in Region III.

Table 3.22-75 Alternative III-D Migratory Bird Habitat Analysis Parameters

Alternative III-D Differentiating Metrics	Total (acres)	Rank among Region III Alternatives Greatest Impact = 1 Least Impact = 4
Total Indirect Impacts to Priority Habitats	324,086	4
Total Indirect Impacts to Non-sagebrush Priority Habitats	256,200	4
Total Indirect Impacts to Wetland/Riparian/Open Water Priority Habitats	10,108	2
Total Indirect Impacts to Priority Habitats along Non-co-located Segments	230,119	4
Total Construction Impacts to Priority Habitats	2,778	4
Total Operation Impacts to Priority Habitats	525	4
Total Indirect Impacts to IBA Priority Habitats	–	4
Total Indirect Impacts to BHCA Priority Habitats	6,651	3
Total Length of Alternative	281 miles	3

Table 3.22-76 Alternative III-D Priority Habitat Analysis

Alternative III-D Priority Habitats	Construction Impacts to Priority Habitats (acres)	Operation Impacts to Priority Habitats (acres)	Indirect Impacts to Priority Habitats (acres)	Percentage of Existing Priority Habitats Indirectly Impacted within Region III Analysis Area	Indirect Impacts to IBA Priority Habitats (acres)	Indirect Impacts to BHCA Priority Habitats (acres)	Indirect Impacts to Priority Habitats along Non–co–located Segments[1] (acres)	Percentage of Priority Habitats along Non–co–located Segments[1]
Aspen Forest and Woodland								
Cliff and Canyon	6	2	1,868	1.1	–	50	1,474	90
Desert Shrubland	872	166	109,730	4.9	–	3,926	72,955	74
Grassland	492	87	57,902	7.2	–	115	40,599	77
Herbaceous Wetland	56	9	7,108	8.7	–	710	5,217	80
Montane Shrubland	163	37	11,645	6.2	–	–	9,281	100
Open Water	1	<1	459	1.3	–	85	34	23
Sagebrush Shrubland	637	127	67,886	5.7	–	2	53,522	90
Saltbush Shrubland	520	91	65,246	10.3	–	1,330	45,313	76
Woody Riparian and Wetlands	31	7	2,541	4.7	–	431	1,725	82
Total	**2,778**	**525**	**324,086**		**0**	**6,651**	**230,119**	

[1] Non-co-located construction refers to areas that are not co-located with existing aboveground utilities.

Table 3.22-77 Region III Alternative Variation Impact Parameters

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
Migratory Bird Species																		
Total migratory bird habitat (acres)[1]	313	106	27,527	275	77	28,455	309	109	26,573	275	77	28,455	453	112	44,421	403	112	40,661
Percentage of existing habitat within the Region III analysis area	<0.01	<0.01	0.39	<0.01	<0.01	0.40	<0.01	<0.01	0.37	<0.01	<0.01	0.40	0.01	<0.01	0.62	0.01	<0.01	0.57
Relative Collision Potential for Migratory Birds																		
Length of transmission line (miles)[2]	17			15			17			15			29			23		
Raptor Nests (Non-special Status)[3]																		
Number of raptor nests within 1 mile of the potential disturbance areas[4]	1			18			1			18			9			66		
Bird Habitat Conservation Areas																		
UT-48: Virgin River BHCA (acres)	19	7	2,660	85	19	9,644	19	7	2,660	85	19	9,644	237	54	17,504	65	14	7,804
Percentage of existing UT-48: Virgin River BHCA habitat within the Region III analysis area	<0.01	<0.01	0.40	0.01	<0.01	1.43	–	–	0.40	0.01	<0.01	1.43	0.04	0.01	2.60	0.01	<0.01	1.16
Audubon Important Bird Areas																		
There are no IBAs within the 250-foot-wide transmission line ROW.																		
Migratory Bird Habitats																		
Agricultural Land	-	-	-	-	-	-	-	-	23	-	-	-	9	2	197	<1	<1	1,178
Aspen Forest and Woodland[5]	2	1	89	-	-	10	2	1	87	-	-	10	<1	<1	11	-	-	10
Barren/Sparsely Vegetated	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cliff and Canyon[5]	1	<1	42	-	-	56	-	<1	42	-	-	56	<1	<1	76	<1	<1	58
Conifer Forest	-	-	4	-	-	-	-	-	4	-	-	-	<1	<1	12	-	-	1
Deciduous Forest	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Desert Shrubland[5]	<1	<1	412	5	1	963	<1	<1	412	5	1	963	12	3	674	1	<1	340
Dunes	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ephemeral Wash	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Grassland[5]	2	1	237	3	1	437	2	1	266	3	1	437	23	5	1026	3	2	635
Greasewood Flat	-	-	-	<1	<1	177	-	-	-	<1	<1	177	1	<1	226	<1	<1	177
Herbaceous Wetland[5]	-	1	6	1	<1	248	-	-	6	1	<1	248	2	1	272	1	<1	246
Montane Grassland	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	2	<1	<1	4
Montane Shrubland[5]	51	16	3,128	15	4	1,970	50	16	3112	15	4	1970	15	4	1687	15	4	1,970
Open Water[5]	-	-	-	-	-	-	-	-	-	-	-	-	<1	<1	118	<1	<1	115
Pinyon/Juniper Woodland	132	43	13,688	108	26	13,671	129	44	12582	108	26	13671	219	57	27458	150	39	18,677
Sagebrush Shrubland[5]	121	-	9,264	139	43	10,564	121	45	9380	139	43	10564	163	39	12231	229	67	16,928
Saltbush Shrubland[5]	-	43	-	<1	<1	33	-	-	-	<1	<1	33	<1	<1	57	<1	<1	52
Tundra	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Woody Riparian and Wetlands[5]	5	2	656	3	1	327	5	2	659	3	1	327	8	2	375	3	1	268

[1] All vegetation communities and land forms defined for the Project constitute migratory bird potential habitat except the developed/disturbed community. Although the developed/disturbed land cover type is not considered to be suitable avian habitat and is not included in analyses or reported disturbance acreages, some disturbance-tolerant species utilize these areas. Further discussion of these vegetation communities is included in Section 3.5.6, Impacts to Vegetation.

[2] Length refers to length of 600-kV transmission lines and provides a measure of avian collision potential.

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

[4] Nests of unknown raptor species are tabulated in both Sections 3.8 and 3.22 because they may have been utilized by either special status or non-special status raptor species.

[5] Region III priority habitats, as identified in the Utah and Nevada SWAPs and PIF Bird Conservation Plans.

Table 3.22-78 Region III Alternative Connector Impact Parameters

Alternative Connector	Analysis
Moapa Alternative Connector	• Approximately 13 miles of transmission lines.[1] • Approximately 175 acres of construction, 33 acres of operation, and 23,227 acres of indirect impacts to migratory bird potential habitat would occur.[2] • No construction or operation impacts to IBAs would occur. • Approximately 13 acres of construction, 2 acres of operation, and 1,378 acres of indirect impacts would occur to the Lower Muddy River BHCA. • No raptor nests are within 1 mile of the potential disturbance areas.[3,4] • Acres of construction, operation, and indirect impacts to Region III priority habitats: – No direct or indirect impacts to agricultural land would occur. – No direct or indirect impacts to aspen forest and woodland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 477 acres of indirect impacts to barren/sparsely vegetated habitat would occur. – No direct and approximately 2 acres of indirect impacts to cliff and canyon habitat would occur. – Approximately 129 acres of construction, 24 acres of operation, and 19,060 acres of indirect impacts to desert shrubland habitat would occur. – Approximately 45 acres of construction, 8 acres of operation, and 3,628 acres of indirect impacts to ephemeral wash habitat would occur. – No direct or indirect impacts to grassland habitat would occur. – No direct or indirect impacts to greasewood flat habitat would occur. – No direct and approximately 2 acres of indirect impacts to herbaceous wetland habitat would occur. – No direct or indirect impacts to montane shrubland habitat would occur. – No direct or indirect impacts to open water habitat would occur. – No direct or indirect impacts to pinyon-juniper woodland habitat would occur. – No direct or indirect impacts to sagebrush shrubland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 33 acres of indirect impacts to saltbush shrubland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 27 acres of indirect impacts to woody riparian and wetlands habitat would occur.
Avon Alternative Connector	• Approximately 8 miles of transmission lines.[1] • Approximately 96 acres of construction, 18 acres of operation and 13,906 acres of indirect impacts to migratory bird potential habitat would occur.[2] • No construction or operation impacts to IBAs or BHCAs would occur. • Five raptor nests are within 1 mile of the potential disturbance areas.[3,4] • Acres of construction, operation, and indirect impacts to Region III priority habitats: – No direct or indirect impacts to agricultural land would occur. – No direct or indirect impacts to aspen forest and woodland habitat would occur. – No direct or indirect impacts to barren/sparsely vegetated habitat would occur. – No direct or indirect impacts to cliff and canyon habitat would occur. – No direct or indirect impacts to desert shrubland habitat would occur. – No direct or indirect impacts to ephemeral wash habitat would occur. – Approximately 5 acres of construction, 1 acre of operation, and 885 acres of indirect impacts to grassland habitat would occur. – Approximately 2 acres of construction, <1 acre of operation, and 538 acres of indirect impacts to greasewood flat habitat would occur. – Approximately 1 acre of construction, <1 acre of operation, and 549 acres of indirect impacts to herbaceous wetland habitat would occur. – No direct or indirect impacts to montane shrubland habitat would occur. – No direct and approximately 23 acres of indirect impacts to open water habitat would occur. – Approximately 12 acres of construction, 2 acres of operation, and 1,896 acres of indirect impacts to sagebrush shrubland habitat would occur. – Approximately 75 acres of construction, 14 acres of operation, and 9,629 acres of indirect impacts to saltbush shrubland habitat would occur. – No direct or indirect impacts to woody riparian and wetlands habitat would occur

Table 3.22-78 Region III Alternative Connector Impact Parameters

Alternative Connector	Analysis
Arrowhead Alternative Connector	• Approximately 3 miles of transmission lines.[1] • Approximately 53 acres of construction, 9 acres of operation and 6,269 acres of indirect impacts to migratory bird potential habitat would occur.[2] • No construction or operation indirect impacts to IBAs would occur. • Approximately 15 acres of construction, 3 acres of operation, and 1,949 acres of indirect impacts would occur to the Lower Muddy River BHCA. • No raptor nests are within 1 mile of the potential disturbance areas.[3,4] • Acres of construction, operation, and indirect impacts to Region III priority habitats: – No direct and approximately 134 acres of indirect impacts to agricultural land would occur. – No direct or indirect impacts to aspen forest and woodland habitat would occur. – Approximately 9 acres of construction, <1 acre of operation, and 976 acres of indirect impacts to barren/sparsely vegetated habitat would occur. – No direct and approximately 70 acres of indirect impacts to cliff and canyon habitat would occur. – Approximately 39 acres of construction, 6 acres of operation, and 4,400 acres of indirect impacts to desert shrubland habitat would occur. – Approximately 2 acres of construction, <1 acre of operation, and 223 acres of indirect impacts to ephemeral wash habitat would occur. – No direct or indirect impacts to grassland habitat would occur. – No direct or indirect impacts to greasewood flat habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 48 acres of indirect impacts to herbaceous wetland habitat would occur. – No direct or indirect impacts to montane shrubland habitat would occur. – No direct or indirect impacts to open water habitat would occur. – No direct or indirect impacts to sagebrush shrubland habitat would occur. – Approximately 1 acre of construction, <1 acre of operation, and 89 acres of indirect impacts to saltbush shrubland habitat would occur. – Approximately 1 acre of construction, <1 acre of operation, and 330 acres of indirect impacts to woody riparian and wetlands habitat would occur.

[1] Length refers to length of transmission lines and provides a measure of avian collision potential.

[2] All vegetation communities and land forms defined for the Project constitute migratory bird potential habitat except the developed/disturbed community. Although the developed/disturbed land cover type is not considered to be suitable avian habitat and is not included in analyses or reported disturbance acreages, some disturbance-tolerant species utilize these areas. Further discussion of these vegetation communities is included in Section 3.5.6, Impacts to Vegetation.

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

[4] Nests of unknown raptor species are tabulated in both Sections 3.8 and 3.22 because they may have been utilized by either special status or non-special status raptor species.

Table 3.22-79 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 3.22-79 Region III Alternative Ground Electrode System1 Impact Parameters

Alternative Ground Electrode System Locations	Analysis
Mormon Mesa - Carp Elgin Rd (Alternative III-A)	• Approximately 6 miles of low-voltage electrode bed interconnection lines.[2] • Approximately 90 acres of construction,18 acres of operation, and 20,595 acres of indirect impacts to migratory bird potential habitat would occur.[3] • No construction or operation impacts to IBAs of BHCAs would occur. • No raptor nests are within 1 mile of the potential disturbance areas.[4,5] • Acres of construction, operation, and indirect impacts to Region III priority habitats: – No direct or indirect impacts to agricultural land habitat would occur. – No direct or indirect impacts to aspen forest and woodland habitat would occur. – No direct or indirect impacts to barren/sparsely vegetated habitat would occur. – No direct or indirect impacts to cliff and canyon habitat would occur. – No direct or indirect impacts to conifer forest habitat would occur. – No direct or indirect impacts to deciduous forest habitat would occur.

Table 3.22-79 Region III Alternative Ground Electrode System1 Impact Parameters

Alternative Ground Electrode System Locations	Analysis
	– Approximately 56 acres of construction, 11 acres of operation, and 12,734 acres of indirect impacts to desert shrubland habitat would occur. – No direct or indirect impacts to dune habitat would occur. – Approximately 34 acres of construction, 7 acres of operation, and 7,862 acres of indirect impacts to ephemeral wash habitat would occur. – No direct or indirect impacts to grassland habitat would occur. – No direct or indirect impacts to greasewood flat habitat would occur. – No direct or indirect impacts to herbaceous wetland habitat would occur. – No direct or indirect impacts to montane grassland habitat would occur. – No direct or indirect impacts to montane shrubland habitat would occur. – No direct or indirect impacts to open water habitat would occur. – No direct or indirect impacts to pinyon-juniper woodland habitat would occur. – No direct or indirect impacts to sagebrush shrubland habitat would occur. – No direct or indirect impacts to saltbush shrubland habitat would occur. – No direct or indirect impacts to woody riparian and wetlands habitat would occur.
Mormon Mesa - Carp Elgin Rd (Alternative III-B and III-D)	• Approximately 6 miles of low-voltage electrode bed interconnection lines.[2] • Approximately 102 acres of construction, 24 acres of operation, and 20,595 acres of indirect impacts to migratory bird potential habitat would occur.[3] • No construction or operation impacts to IBAs of BHCAs would occur. • No raptor nests are within 1 mile of the potential disturbance areas.[4,5] • Acres of construction, operation, and indirect impacts to Region III priority habitats: • No direct or indirect impacts to agricultural land habitat would occur. – No direct or indirect impacts to aspen forest and woodland habitat would occur. – No direct or indirect impacts to barren/sparsely vegetated habitat would occur. – No direct or indirect impacts to cliff and canyon habitat would occur. – No direct or indirect impacts to conifer forest habitat would occur. – No direct or indirect impacts to deciduous forest habitat would occur. – Approximately 63 acres of construction, 15 acres of operation, and 12,734 acres of indirect impacts to desert shrubland habitat would occur. – Approximately 39 acres of construction, 9 acres of operation, and 7,862 acres of indirect impacts to ephemeral wash habitat would occur. – No direct or indirect impacts to dune habitat would occur. – No direct or indirect impacts to grassland habitat would occur. – No direct or indirect impacts to greasewood flat habitat would occur. – No direct or indirect impacts to herbaceous wetland habitat would occur. – No direct or indirect impacts to montane grassland habitat would occur. – No direct or indirect impacts to montane shrubland habitat would occur. – No direct or indirect impacts to open water habitat would occur. – No direct or indirect impacts to pinyon-juniper woodland habitat would occur. – No direct or indirect impacts to sagebrush shrubland habitat would occur. – No direct or indirect impacts to saltbush shrubland habitat would occur. – No direct or indirect impacts to woody riparian and wetlands habitat would occur.

Table 3.22-79 Region III Alternative Ground Electrode System1 Impact Parameters

Alternative Ground Electrode System Locations	Analysis
Halfway Wash - Virgin River (Alternative III-A)	• Approximately 8 miles of low-voltage electrode bed interconnection lines.[1] • Approximately 83 acres of construction and 15 acres of operation impacts to migratory bird potential habitat would occur.[2] • No construction or operation impacts to IBAs of BHCAs would occur. • No raptor nests are within 1 mile of the potential disturbance areas.[3,4] • Acres of construction, operation, and indirect impacts to Region III priority habitats: – No direct or indirect impacts to agricultural land habitat would occur. – No direct or indirect impacts to aspen forest and woodland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 16 acres of indirect impacts to barren/sparsely vegetated habitat would occur. – Approximately 1 acre of construction, <1 acre of operation, and 86 acres of indirect impacts to cliff and canyon habitat would occur. – No direct or indirect impacts to conifer forest habitat would occur. – No direct or indirect impacts to deciduous forest habitat would occur – Approximately 63 acres of construction, 11 acres of operation, and 5,706 acres of indirect impacts to desert shrubland habitat would occur. – No direct or indirect impacts to dune habitat would occur. – Approximately 19 acres of construction, 3 acres of operation, and 1,754 acres of indirect impacts to ephemeral wash habitat would occur. – No direct or indirect impacts to grassland habitat would occur. – No direct or indirect impacts to greasewood flat habitat would occur. – No direct or indirect impacts to herbaceous wetland habitat would occur. – No direct or indirect impacts to montane grassland habitat would occur. – No direct or indirect impacts to montane shrubland habitat would occur. – No direct or indirect impacts to open water habitat would occur. – No direct or indirect impacts to pinyon-juniper woodland habitat would occur. – No direct or indirect impacts to sagebrush shrubland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 7 acres of indirect impacts to saltbush shrubland habitat would occur. – No direct or indirect impacts to woody riparian and wetlands habitat would occur.
Halfway Wash – Virgin River (Alternative III-B and III-D)	• Approximately 8 miles of low-voltage electrode bed interconnection lines.[2] • Approximately 92 acres of construction, 19 acres of operation, and 7,570 acres of indirect impacts to migratory bird potential habitat would occur.[3] • No construction or operation impacts to IBAs of BHCAs would occur. • No raptor nests are within 1 mile of the potential disturbance areas.[4,5] • Acres of construction, operation, and indirect impacts to Region III priority habitats: – No direct or indirect impacts to agricultural land habitat would occur. – No direct or indirect impacts to aspen forest and woodland habitat would occur. – Approximately <1 acres of construction, <1 acres of operation, and 16 acres of indirect impacts to barren/sparsely vegetated habitat would occur. – Approximately 1 acres of construction, <1 acres of operation, and 86 acres of indirect impacts to cliff and canyon habitat would occur. – No direct or indirect impacts to conifer forest habitat would occur. – No direct or indirect impacts to deciduous forest habitat would occur. – Approximately 69 acres of construction, 14 acres of operation, and 5,706 acres of indirect impacts to desert shrubland habitat would occur. – Approximately 21 acres of construction, 4 acres of operation, and 1,754 acres of indirect impacts to ephemeral wash habitat would occur. – No direct or indirect impacts to grassland habitat would occur. – No direct or indirect impacts to greasewood flat habitat would occur. – No direct or indirect impacts to herbaceous wetland habitat would occur. – No direct or indirect impacts to montane grassland habitat would occur. – No direct or indirect impacts to montane shrubland habitat would occur. – No direct or indirect impacts to open water habitat would occur. – No direct or indirect impacts to pinyon-juniper woodland habitat would occur.

Table 3.22-79 Region III Alternative Ground Electrode System1 Impact Parameters

Alternative Ground Electrode System Locations	Analysis
	– No direct or indirect impacts to sagebrush shrubland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 7 acres of indirect impacts to saltbush shrubland habitat would occur. – No direct or indirect impacts to woody riparian and wetlands habitat would occur.
Halfway Wash East (Alternative III-A)	• Approximately 4 miles of low-voltage electrode bed interconnection lines.[2] • Approximately 101 acres of construction, 24 acres of operation, and 1,993 acres of indirect impacts to migratory bird potential habitat would occur.[3] • No construction or operation impacts to IBAs of BHCAs would occur. No raptor nests are within 1 mile of the potential disturbance areas.[4,5] • Acres of construction, operation, and indirect impacts to Region III priority habitats: – No direct or indirect impacts to agricultural land habitat would occur. – No direct or indirect impacts to aspen forest and woodland habitat would occur. – No direct or indirect impacts to barren/sparsely vegetated habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and <1 acre of indirect impacts to cliff and canyon habitat would occur. – No direct or indirect impacts to conifer forest habitat would occur. – No direct or indirect impacts to deciduous forest habitat would occur. – Approximately 71 acres of construction, 17 acres of operation, and 1,390 acres of indirect impacts to desert shrubland habitat would occur. – No direct or indirect impacts to dunes habitat would occur. – Approximately 30 acres of construction, 7 acres of operation, and 595 acres of indirect impacts to ephemeral wash habitat would occur. – No direct or indirect impacts to grassland habitat would occur. – No direct or indirect impacts to greasewood flat habitat would occur. – No direct or indirect impacts to herbaceous wetland habitat would occur. – No direct or indirect impacts to montane grassland habitat would occur. – No direct or indirect impacts to montane shrubland habitat would occur. – No direct or indirect impacts to open water habitat would occur. – No direct or indirect impacts to pinyon-juniper woodland habitat would occur. – No direct or indirect impacts to sagebrush shrubland habitat would occur. – No direct or indirect impacts to saltbush shrubland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 8 acres of indirect impacts to woody riparian and wetlands habitat would occur.

Table 3.22-79 Region III Alternative Ground Electrode System1 Impact Parameters

Alternative Ground Electrode System Locations	Analysis
Halfway Wash East (Alternative III-B and III-D)	• Approximately 10 miles of low-voltage electrode bed interconnection lines.[2] • Approximately 111 acres of construction and 29 acres of operation impacts to migratory bird potential habitat would occur.[3] • No construction or operation impacts to IBAs of BHCAs would occur. • No raptor nests are within 1 mile of the potential disturbance areas.[4,5] • Acres of construction, operation, and indirect impacts to Region III priority habitats: – No direct or indirect impacts to agricultural land habitat would occur. – No direct or indirect impacts to aspen forest and woodland habitat would occur. – No direct or indirect impacts to barren/sparsely vegetated habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and <1 acre of indirect impacts to cliff and canyon habitat would occur. – No direct or indirect impacts to conifer forest habitat would occur. – No direct or indirect impacts to deciduous forest habitat would occur. – Approximately 78 acres of construction, 20 acres of operation, and 1,390 acres of indirect impacts to desert shrubland habitat would occur. – Approximately 33 acres of construction, 9 acres of operation, and 595 acres of indirect impacts to ephemeral wash habitat would occur. – No direct or indirect impacts to grassland habitat would occur. – No direct or indirect impacts to greasewood flat habitat would occur. – No direct or indirect impacts to herbaceous wetland habitat would occur. – No direct or indirect impacts to montane grassland habitat would occur. – No direct or indirect impacts to montane shrubland habitat would occur. – No direct or indirect impacts to open water habitat would occur. – No direct or indirect impacts to pinyon-juniper woodland habitat would occur. – No direct or indirect impacts to sagebrush shrubland habitat would occur. – No direct or indirect impacts to saltbush shrubland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 8 acres of indirect impacts to woody riparian and wetlands habitat would occur.
Meadow Valley 2 (Alternative III-C)	• Approximately 22 miles of low-voltage electrode bed interconnection lines.[2] • Approximately 170 acres of construction., 61 acres of operation, and 7,472 acres of indirect impacts to migratory bird potential habitat would occur.[3] • Approximately 13 acres of construction and 5 acres of operation impacts to the Lower Muddy River BHCA would occur. • No raptor nests are within 1 mile of the potential disturbance areas.[4,5] • No construction or operation impacts to IBAs would occur. • Acres of construction, operation, and indirect impacts to Region III priority habitats: – No direct or indirect impacts to agricultural land habitat would occur. – No direct or indirect impacts to aspen forest and woodland habitat would occur. – Approximately 1 acre of construction, <1 acre of operation, and 44 acres of indirect impacts to barren/sparsely vegetated habitat would occur. – Approximately 5 acres of construction, 2 acres of operation, and 222 acres of indirect impacts to cliff and canyon habitat would occur. – No direct or indirect impacts to conifer forest habitat would occur. – No direct or indirect impacts to deciduous forest habitat would occur. – Approximately 139 acres of construction, 50 acres of operation, and 6,110 acres of indirect impacts to desert shrubland habitat would occur. – No direct or indirect impacts to dune habitat would occur – Approximately 17 acres of construction, 6 acres of operation, and 735 acres of indirect impacts to ephemeral wash habitat would occur. – No direct or indirect impacts to grassland habitat would occur. – No direct or indirect impacts to greasewood flat habitat would occur. – No direct or indirect impacts to herbaceous wetland habitat would occur. – No direct or indirect impacts to montane grassland habitat would occur. – No direct or indirect impacts to montane shrubland habitat would occur. – No direct or indirect impacts to open water habitat would occur.

Table 3.22-79 Region III Alternative Ground Electrode System1 Impact Parameters

Alternative Ground Electrode System Locations	Analysis
	– No direct or indirect impacts to pinyon-juniper woodland habitat would occur. – No direct or indirect impacts to sagebrush shrubland habitat would occur. – Approximately 8 acres of construction, 3 acres of operation, and 335 acres of indirect impacts to saltbush shrubland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 6 acres of indirect impacts to woody riparian and wetlands habitat would occur.
Delta Design Option 2	• Approximately 14 miles of low-voltage electrode bed interconnection lines.[2] • Approximately 125 acres of construction, 37 acres of operation, and 170,625 acres of indirect impacts to migratory bird potential habitat would occur.[3] • No construction or operation impacts to IBAs of BHCAs would occur. • No raptor nests are within 1 mile of the potential disturbance areas.[4,5] • Acres of construction, operation, and indirect impacts to Region III priority habitats: – No direct or indirect impacts to agricultural land habitat would occur. – No direct or indirect impacts to aspen forest and woodland habitat would occur. – Approximately 1 acre of construction, <1 acre of operation, and 1,917 acres of indirect impacts to barren/sparsely vegetated habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 286 acres of indirect impacts to cliff and canyon habitat would occur. – No direct or indirect impacts to conifer forest habitat would occur. – No direct or indirect impacts to deciduous forest habitat would occur. – No direct or indirect impacts to dune habitat would occur. – No direct or indirect impacts to desert shrubland habitat would occur. – No direct or indirect impacts to ephemeral wash habitat would occur. – Approximately 25 acres of construction, 7 acres of operation, and 34,128 acres of indirect impacts to grassland habitat would occur. – Approximately 18 acres of construction, 5 acres of operation, and 23,859 acres of indirect impacts to greasewood flat habitat would occur. – Approximately 2 acres of construction, 1 acre of operation, and 2,649 acres of indirect impacts to herbaceous wetland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 1 acre of indirect impacts to montane grassland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 16 acres of indirect impacts to montane shrubland habitat would occur. – No direct or indirect impacts to open water habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 541 acres of indirect impacts to pinyon-juniper woodland habitat would occur. – Approximately 11 acres of construction, 33 acres of operation, and 15,600 acres of indirect impacts to sagebrush shrubland habitat would occur. – Approximately 67 acres of construction, 20 acres of operation, and 91,620 acres of indirect impacts to saltbush shrubland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 8 acres of indirect impacts to woody riparian and wetlands 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 low-voltage electrode bed interconnection lines and serves as a metric for avian collision potential.

3 All vegetation communities and land forms defined for the Project constitute migratory bird potential habitat except the developed/disturbed community. Although the developed/disturbed land cover type is not considered to be suitable avian habitat and is not included in analyses or reported disturbance acreages, some disturbance-tolerant species utilize these areas. Further discussion of these vegetation communities is included in Section 3.5.6, Impacts to Vegetation.

4 Nests of unknown raptor species are tabulated in both Sections 3.8 and 3.22 because they may have been utilized by either special status or non-special status raptor species.

5 Special status species are discussed in Section 3.8, Special Status Wildlife Species.

Region III Conclusion

Based on a comparison of impact parameters for Region III alternatives, potential direct and indirect impacts to migratory bird species and habitats would be greatest for Alternative III-C, as presented in **Table 3.22-80**. Alternative III-C would result in the greatest direct impact to priority avian habitats. This is due to the fact that the largest acreage of priority habitats for migratory birds is located within the areas potentially impacted by this alternative. Alternative III-D would result in the least impact to migratory birds and habitats according to the established metrics.

Table 3.22-80 Region III Composite Metric Rank Scores

Metric Rank among Region III Alternatives Greatest Impact = 1; Least Impact = 4	Alternative			
	III-A	III-B	III-C	III-D
Total Indirect Impacts to Priority Habitats	2	3	1	4
Total Indirect Impacts to Non-sagebrush Priority Habitats	1	3	2	4
Total Indirect Impacts to Wetland/Riparian/Open Water Priority Habitats	4	3	1	2
Total Indirect Impacts to Priority Habitats along Non-co-located Segments	3	1	2	4
Total Construction Impacts to Priority Habitats	2	3	1	4
Total Operation Impacts to Priority Habitats	1	3	2	4
Total Indirect Impacts to IBA Priority Habitats	4	1	1	4
Total Indirect Impacts to BHCA Priority Habitats	1	4	2	3
Total Length of Alternative	4	2	1	3
Composite Score	22	23	13	32

Alternative III-A would result in the greatest impact and Alternative III-B would result in the least impact to known raptor nests. Alternatives III-B and III-C would result in impacts to Audubon IBA habitats and Alternatives III-A and III-D would not. The greatest impact to BHCA priority habitats in the Region III potential disturbance areas would occur under Alternative III-A. The greatest amount of herbaceous wetland, open water, and woody riparian and wetland habitat in the Region III potential disturbance area would occur under Alternative III-C. For this analysis, the occurrence of priority habitats for migratory birds serves as an indicator of migratory bird use and BCC and PIF species occurrence potential in Region III. Project impacts on migratory bird, BCC, and PIF species and associated habitats would be avoided or considered to be low in magnitude and short-term in duration after implementing BMPs, design features, and additional mitigation measures (Section 3.22.6 and **Appendix C**).

A total of 10 BCC and PIF species have high potential to occur within Region III priority habitats. These species have the potential to occur in priority habitats present along all alternatives; thus a comparison between alternatives of this parameter is not possible. A total of 28 BCC and PIF species have moderate potential to occur within Region III priority habitats and a total of 25 BCC and PIF species have low potential to occur in Region III priority habitats. Among the BCC and PIF species that could occur in the habitats present in Region III, a total of 32 species are considered habitat obligates, both of priority and non-priority vegetation communities. Included in this number is the black rosy-finch. This species has specific alpine habitat requirements that do not correspond entirely with the vegetation communities identified for the Project. Habitat obligate species could be disproportionately impacted by disturbance in the following habitat types, particularly relative to breeding habitat.

- Aspen forest and woodland: none;
- Cliff and canyon: ferruginous hawk, golden eagle, peregrine falcon, prairie falcon, and white-throated swift;

- Conifer and deciduous forest: flammulated owl, Lewis's woodpecker, Williamson's sapsucker, red-naped sapsucker, olive-sided flycatcher, Steller's jay, Clark's nutcracker, Bohemian waxwing, and white-winged crossbill;
- Desert shrubland: Costa's hummingbird, verdin, cactus wren, and black-tailed gnatcatcher;
- Grassland: long-billed curlew, short-eared owl, and burrowing owl;
- Montane shrubland: none;
- Open water, herbaceous wetland, woody riparian and wetlands: eared grebe, least bittern, bald eagle, long-billed curlew, willow flycatcher, Bell's vireo, yellow warbler, Lucy's warbler, and yellow-headed blackbird;
- Sagebrush shrubland: sage thrasher, sage sparrow, Brewer's sparrow; and
- Saltbush shrubland: none.

Specific criteria and rationale for the designation of IBAs and BHCAs is discussed in Section 3.22.4.1. Audubon IBAs and BHCAs serve as additional indicators of priority avian habitats across Project alternatives. **Table 3.22-69** presents impacts to the Pahranagat Valley Complex IBA and 6 BHCAs, by alternative. The Pahranagat Valley Complex IBA would be traversed by Alternative III-C, resulting in the disturbance acreages as presented in **Table 3.22-68.** No other IBAs would be within Region III potential disturbance areas.

BHCA habitats would be traversed by all Region III alternative routes, as presented in **Tables 3.22-65** and **3.22-69**. Table **3.22-68** provides a summary of the acreages of priority habitats existing within the IBA and BHCAs present within Region III areas analysis area. The greatest amount of BHCA priority habitats present within the analysis area is the NV-27 Lincoln BHCA. This BHCA is within the potential disturbance areas for Alternative III-C. Alternative III-A would impact the greatest amount of BHCA habitats in comparison to other Region III alternatives (**Table 3.22-69**).

Impacts from the Project to migratory birds would be expected to result primarily from habitat loss, alteration, and fragmentation. The impacts, design features, and mitigation measures described under Region I Conclusion also would apply to Region III migratory bird species. Most BCC and PIF species that occur in Region III are likely to be adversely affected by increased habitat fragmentation. In Region III, Alternative III-C would have the longest length in comparison to other Project alternatives. Therefore, it can be concluded that Alternative III-C would pose the greatest collision risk to avian species relative to other Project alternatives.

Notable Species-Specific Conclusions

Several BCC and/or PIF species were selected for additional analysis as examples from each priority habitat present in the Region III analysis area. Factors considered in this selection include whether the species is an obligate of the priority habitat, its potential for occurrence in the Region III analysis area, its state or federal status, and whether the species' geographic range is limited to the Region III analysis area rather than inclusive of other Project regions. Additionally, raptor and non-raptor species and migratory and non-migratory species were analyzed.

<u>Aspen Forest and Woodland Species</u>

A variety of migratory bird species inhabits the aspen forest and woodland community in Region III, including 11 BCC and PIF species. The red-naped sapsucker and flammulated owl were selected as examples for this priority habitat in Region III. These species are discussed in Section 3.22.6.4. The red-naped sapsucker has low potential to occur and the flammulated owl has moderate potential to occur in the Region III analysis area.

No aspen forest and woodland habitat would be directly impacted by the Project in Region III. Indirect impacts to this habitat would occur under Alternative III-A. Impacts to aspen forest and woodland habitat would be expected to result primarily from habitat alteration and fragmentation.

Cliff and Canyon Species

A variety of migratory bird species inhabits cliff and canyon habitat in Region III, including 6 BCC and PIF species. The golden eagle, peregrine falcon, ferruginous hawk, prairie falcon, and white-throated swift require cliff and canyon habitat for nesting. The peregrine falcon and white-throated swift were selected as examples for this priority habitat in Region III.

Peregrine Falcon

The peregrine falcon is a migratory species and could occur in the Region III analysis area during the breeding season. The species is designated as BLM sensitive in Wyoming, USFS Sensitive, a Colorado SGCN; a Utah SGCN-Tier III, a Wyoming SGCN-Tier II, Nevada state-endangered, a BCC, and a PIF Species of Conservation Importance. The peregrine falcon is considered to be a climate threatened species according to the Audubon Birds and Climate Change Report (National Audubon Society 2014) and may lose over 50 percent of its current climatic range by 2080. The species has moderate potential to breed and forage in the Region III analysis area.

The peregrine falcon is widely distributed and forages in a variety of open habitats. The species nests exclusively in cliff or canyon habitat and in urban areas where tall buildings simulate this type of habitat. Threats to the peregrine falcon include loss or alteration of nesting habitat, pesticide contamination, and collision with human-made structures, including power lines (White et al. 2002).

White-throated Swift

The white-throated swift is a migratory species and could occur in the Region III analysis area during the breeding season. The species is designated as a Colorado SGCN and a PIF Species of Conservation Importance. The white-throated swift is considered to be a climate threatened species according to the Audubon Birds and Climate Change Report (National Audubon Society 2014) and may lose over 50 percent of its current climatic range by 2080. The species has low potential to breed and forage in the Region III analysis area.

The white-throated swift requires cliff habitat for nesting, but also will utilize human-made structures that simulate this habitat, such as highway overpasses, bridges, and buildings with suitable crevices or openings. Threats to the species include loss or alteration of nesting habitat and pesticide contamination (Ryan and Collins 2000).

Impacts from the Project to these and other species that utilize cliff and canyon habitat include loss or alteration of nesting habitat and collision potential. Impacts to migratory bird habitat and species are summarized above in Region I Conclusion. The greatest amount of cliff and canyon habitat within the potential disturbance area occurs under Alternative III-C. A total of 4.00 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation. The least amount of cliff and canyon habitat within the potential disturbance area occurs under Alternative III-D. A total of 1.14 percent of this habitat occurs where this alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation.

Desert Shrubland Species

A variety of migratory bird species inhabits desert shrubland habitat in Region III, including 20 BCC and PIF species. The Gambel's quail and cactus wren were selected as examples for this priority habitat in Region III.

Gambel's Quail

The Gambel's quail is non-migratory and could occur in the Region III analysis area throughout the year. The species is designated as a Utah SGCN, Tier III and a PIF Species of Conservation Importance. The Gambel's quail has high potential to occur in the Region III analysis area. The species also is considered a game bird.

The Gambel's quail completes its entire life cycle in desert shrubland habitat. Primary threats to the species include habitat loss, alteration, and degradation (Gee et al. 2013). Proximity to humans increases the likelihood of secondary predation by domestic and feral cats.

Cactus Wren

The cactus wren is non-migratory and could occur in the Region III analysis area throughout the year. The species is designated as a PIF Species of Conservation Importance. The cactus wren has high potential to occur in the Region III analysis area.

The cactus wren completes its entire life cycle in desert shrubland habitat. Primary threats to the species include habitat loss, alteration, and degradation. Proximity to humans increases the likelihood of secondary predation by domestic and feral cats. In addition, a potential threat to this species exists from the cactus moth, an invasive species that threatens the prickly pear cactus, which is a key component of the cactus wren diet (Hamilton et al. 2011).

Impacts from the Project on these and other species that could utilize desert shrubland habitat would be expected to result primarily from habitat loss, alteration, and fragmentation. Impacts to migratory bird habitat and species are summarized above in Region I Conclusion. The greatest amount of desert shrubland habitat within the potential disturbance area occurs under Alternative III-A. A total of 6.08 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation. The least amount of desert shrubland habitat within the potential disturbance area occurs under Alternative III-C. A total of 4.88 percent of this habitat occurs where this alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation.

Grassland Species

A variety of migratory bird species inhabits the grassland community in Region III, including 13 BCC and PIF species. The ferruginous hawk and long-billed curlew were selected as examples for this priority habitat in Region III. These species are discussed in Sections 3.22.6.3 and 3.22.6.4, respectively. The ferruginous hawk has high potential to occur and the long-billed curlew has moderate potential to occur in the Region III analysis area.

Impacts from the Project on these and other species that could utilize grassland habitat would be expected to result primarily from habitat loss, alteration, and fragmentation. Impacts to migratory bird habitat and species are summarized above in Region I Conclusion. The greatest amount of grassland habitat within the potential disturbance area occurs under Alternative III-B. A total of 8.60 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation. The least amount of grassland habitat within the potential disturbance area occurs under Alternative III-D. A total of 7.23 percent of this habitat occurs where this alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation.

Herbaceous Wetland Species

A variety of migratory bird species inhabits the herbaceous wetland community in Region III, including 6 BCC and PIF species. The yellow-headed blackbird and least bittern were selected as examples for this priority habitat in Region III. These species are discussed in Section 3.22.6.3.The yellow-headed

blackbird has moderate potential to occur and the least bittern has low potential to occur in the Region III analysis area.

Impacts from the Project to these and other species that utilize herbaceous wetland habitat would be expected to result primarily from habitat loss, alteration, and fragmentation. Impacts to migratory bird habitat and species are summarized above in Region I Conclusion. Impacts to herbaceous wetlands would be avoided or minimized by spanning these habitats to the extent practicable. To the extent that impacts to jurisdictional wetlands are unavoidable and require a 404 permit, compensatory mitigation would be required to replace Project impacts to wetland functions, including migratory bird habitat. The greatest amount of herbaceous wetland habitat within the potential disturbance area occurs under Alternative III-C. A total of 12.63 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation. The least amount of herbaceous wetland habitat within the potential disturbance area occurs under Alternative III-A. A total of 6.76 percent of this habitat occurs where this alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation.

Montane Grassland Species

A variety of migratory bird species inhabits the montane grassland community in Region III, including 11 BCC and PIF species. The Swainson's hawk and mountain bluebird were selected as examples for this priority habitat in Region III. The Swainson's hawk is discussed in Section 3.22.6.4 and has high potential to occur in the Region III analysis area.

Mountain Bluebird

The mountain bluebird is a migratory species and could occur in the Region III analysis area during the breeding season. The species is designated as a PIF Species of Conservation Importance. The mountain bluebird is considered to be a climate threatened species according to the Audubon Birds and Climate Change Report (National Audubon Society 2014) and may lose over 50 percent of its current climatic range by 2080. The species has moderate potential to breed and forage in the Region III analysis area.

The mountain bluebird is primarily insectivorous and forages in a variety of habitats, including montane grassland. The species a cavity nester that experiences competition for nest holes with native and non-native species, such as the European starling. Other threats include pesticide contamination (Power and Lombardo 1996).

Impacts from the Project on these and other species that could utilize montane grassland habitat would be expected to result primarily from habitat loss, alteration, and fragmentation. Impacts to migratory bird habitat and species are summarized above in Region I Conclusion. The greatest amount of montane grassland habitat within the potential disturbance area occurs under Alternatives II-A, III-C, and III-D. A total of 9.90 percent of this habitat occurs where these alternatives would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation. The least amount of montane grassland habitat within the potential disturbance area occurs under Alternative III-B. A total of 9.29 percent of this habitat occurs where this alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation.

Montane Shrubland Species

A variety of migratory bird species inhabits the montane shrubland community in Region III, including 24 BCC and PIF species. The Virginia's warbler and green-tailed towhee were selected as examples for this priority habitat in Region III. These species are discussed in Section 3.22.6.4. The Virginia's warbler and the green-tailed towhee have moderate potential to occur in the Region III analysis area.

Impacts from the Project on these and other species that could utilize montane shrubland habitat would be expected to result primarily from habitat loss, alteration, and fragmentation. Impacts to migratory bird

habitat and species are summarized above in Region I Conclusion. The greatest amount of montane shrubland habitat within the potential disturbance area occurs under Alternative III-B. A total of 6.23 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation. The least amount of montane shrubland habitat within the potential disturbance area occurs under Alternative III-C. A total of 0.02 percent of this habitat occurs where this alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation.

Open Water Species

A variety of migratory bird species forages in and over open water habitat, including 3 BCC and PIF species. The bald eagle and eared grebe were selected as examples for this priority habitat in Region III. The bald eagle is analyzed in detail in Section 3.8, Special Status Wildlife Species. The eared grebe is discussed in Section 3.22.6.3. The bald eagle has high potential to occur and the eared grebe has moderate potential to occur in the Region III analysis area.

Impacts from the Project to these and other species that utilize open water habitat would be expected to result primarily from habitat loss, alteration, and fragmentation. Impacts to migratory bird habitat and species are summarized above in Region I Conclusion. Impacts to open water and surrounding vegetation would be avoided or minimized by spanning these habitats to the extent practicable. To the extent that impacts to jurisdictional wetlands are unavoidable and require a 404 permit, compensatory mitigation would be required to replace Project impacts to wetland functions, including migratory bird habitat. The greatest amount of open water habitat within the potential disturbance area occurs under Alternative III-A. A total of 3.39 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation. The least amount of open water habitat within the potential disturbance area occurs under Alternative III-C. A total of 0.54 percent of this habitat occurs where this alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation.

Pinyon-Juniper Woodland Species

A variety of migratory bird species inhabits the pinyon-juniper woodland community in Region III, including 24 BCC and PIF species. The juniper titmouse and black-throated gray warbler were selected as examples for this priority habitat in Region III. These species are discussed in Section 3.22.6.4. The juniper titmouse and black-throated gray warbler have moderate potential to inhabit the Region III analysis area.

Impacts from the Project on these and other species that could utilize pinyon-juniper woodland habitat would be expected to result primarily from habitat loss, alteration, and fragmentation. Impacts to migratory bird habitat and species are summarized above in Region I Conclusion. The greatest amount of pinyon-juniper woodland habitat within the potential disturbance area occurs under Alternative III-B. A total of 2.21 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation. The least amount of pinyon-juniper woodland habitat within the potential disturbance area occurs under Alternative III-C. A total of 1.90 percent of this habitat occurs where this alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation.

Sagebrush Shrubland Species

A variety of migratory bird species inhabits the sagebrush shrubland community in Region III, including 15 BCC and PIF species. The greater sage-grouse, sage sparrow, Brewer's sparrow, and sage thrasher were selected as examples for this priority habitat in Region III. The greater sage-grouse is analyzed in detail in Section 3.8, Special Status Wildlife Species, and the Project BA. The sage sparrow, sage thrasher, and Brewer's sparrow are discussed in Section 3.22.6.3. The sage thrasher has low potential to occur, the sage sparrow has moderate potential to occur, and the Brewer's sparrow has moderate potential to occur in the Region III analysis area.

Impacts from the Project to these and other species that could utilize sagebrush shrubland habitat would be expected to result primarily from habitat loss, alteration, and fragmentation. Impacts to migratory bird habitat and species are summarized above in Region I Conclusion. Mitigation developed to offset impacts to the greater sage-grouse would be expected to benefit other species that utilize sagebrush shrubland habitat as well. The greatest amount of sagebrush shrubland habitat within the potential disturbance area occurs under Alternative III-C. A total of 8.17 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation. The least amount of sagebrush shrubland habitat within the potential disturbance area occurs under Alternative III-A. A total of 5.13 percent of this habitat occurs where this alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation.

Woody Riparian and Wetlands Species

A variety of migratory bird species inhabits the woody riparian and wetlands community in Region III, including 20 BCC and PIF species. The willow flycatcher and yellow warbler were selected as examples for this priority habitat in Region III. These species are discussed in Sections 3.22.6.3 and 3.22.6.4, respectively. The willow flycatcher has low potential to occur and the yellow warbler has moderate potential to occur in the Region III analysis area.

Impacts from the Project to these and other species that could utilize woody riparian and wetlands habitat would be expected to result primarily from habitat loss and alteration. Impacts to migratory bird habitat and species are summarized above in Region I Conclusion. The greatest amount of woody riparian and wetlands habitat within the potential disturbance area occurs under Alternative III-D. A total of 4.67 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation. The least amount of woody riparian and wetlands habitat within the potential disturbance area occurs under Alternative III-C. A total of 0.06 percent of this habitat occurs where this alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation.

This analysis provides a comparison of the number of priority habitat types and the aggregate acreages and proportions of existing priority habitats among the Project alternatives in the Region III analysis area (**Table 3.22-81**). Alternative III-C would impact the greatest number and acreage of priority habitats in comparison to other Project alternatives. These potential impacts to priority habitats could result in localized adverse effects to migratory bird species, but are not anticipated to present an imminent threat to the sustainability of BCC and PIF populations within the analysis area due to small proportion of habitats affected and the availability of priority habitat types throughout the analysis area. Discussion of the cumulative impacts of this Project in addition to other development actions is discussed in Chapter 5.0, Cumulative Impacts. Of the remaining alternatives considered, Alternative III-D would result in impacts to the lowest amount of priority habitats, according to the defined metrics.

Under all proposed Region III alternatives and components, adverse impacts to migratory birds, including BCC and PIF species, and their habitats would occur. Impacts would vary by species according to species-specific habitat requirements. It is likely that individuals of all migratory bird species in Region III would be impacted on a temporary and short-term basis during construction. Long-term impacts would vary by species and include, but would not be limited to, the loss or conversion of habitat, increased risk of collision, increased habitat fragmentation, noxious weed invasions, and increased noise and disturbance levels from operation and maintenance activities. These impacts are likely to result in locally reduced nesting attempts and breeding success for multiple species; reduced recruitment; and avoidance of otherwise suitable habitat that has been fragmented by the Project.

Table 3.22-81 Region III Alternative Rankings

Metric	Metric Rank among Region III Alternatives Greatest Impact = 1; Least Impact = 4			
	1	2	3	4
Total Indirect Impacts to Priority Habitats	III–C	III–A	III–B	III–D
Total Indirect Impacts to Non-sagebrush Priority Habitats	III–A	III–C	III–B	III–D
Total Indirect Impacts to Wetland/Riparian/Open Water Priority Habitats	III–C	III–D	III–B	III–A
Total Indirect Impacts to Priority Habitats along Non-co-located Segments	III–B	III–C	III–A	III–D
Total Construction Impacts to Priority Habitats	III–C	III–A	III–B	III–D
Total Operation Impacts to Priority Habitats	III–A	III–C	III–B	III–D
Total Indirect Impacts to IBA Priority Habitats	III–B/III–C	–	–	III–A/III–D
Total Indirect Impacts to BHCA Priority Habitats	III–A	III–C	III–D	III–B
Total Length of Alternative	III–C	III–B	III–D	III–A

3.22.6.6 Region IV

Alternative IV-A

Habitat Disturbance and Fragmentation

Alternative IV-A would traverse approximately 37 miles of habitat in southern Nevada. This alternative would be entirely co-located with existing aboveground utilities, as presented in **Table 3.22-82**. Existing conditions within the Alternative IV-A potential disturbance areas relative to migratory birds can be characterized as highly disturbed and fragmented. Alternative IV-A is highly fragmented and disturbed by three major highways: SR-147, SR-564, and US-93, as well as many other city and county roads within the potential disturbance areas. Major sources of disturbance within the Alternative IV-A potential disturbance areas include a residential area in the eastern portion of the City of Henderson, a Las Vegas Valley wastewater treatment plant, and the Pabco Gypsum Quarry located northeast of Las Vegas. A total of 88 miles of existing roads (2.38 miles of existing roads per mile of alternative) are located within the Alternative IV-A potential disturbance areas, as presented in **Table 3.22-82**. This represents the lowest existing road density within the disturbance areas among Region IV alternatives.

Table 3.22-82 Region IV Existing Conditions

Alternative	Length (miles)	Length of Non-co-located Construction[1]	Length of Co-located Construction	Miles of Existing Roads within Region IV Potential Disturbance Areas	Miles of Roads within Region IV Disturbance Areas/Miles of Alternative
IV-A	37	–	37	88	2.38
IV-B	40	8	30	116	2.89
IV-C	44	8	35	156	3.54

[1] Non-co-located construction refers to areas that are not co-located with existing aboveground utilities.

Table 3.22-83 provides a tabulation of impacts associated with the alternative routes in Region IV. Key impact parameters that relate to the impact discussion in Section 3.22.6.2, Impacts Common to All Alternative Routes and Associated Components, and specific differences by alternative are discussed below.

Key Parameters Summary

Migratory Bird Habitat

The types of impacts to migratory bird habitat under Alternative IV-A are described in Section 3.22.6.2, Impacts Common to All Alternative Transmission Line Routes and Associated Components. Potential impacts to migratory bird species and associated habitats under Alternative IV-A would include construction and operation impacts to 392 acres and 89 acres, respectively, of potentially suitable breeding, roosting, foraging, and winter habitats. These areas represent 0.04 percent and 0.01 percent of potentially suitable habitat within the Region IV analysis area. Region IV priority habitats are denoted in **Table 3.22-83** with a footnote and include the cliff and canyon, desert shrubland, herbaceous wetland, montane shrubland, open water, saltbush shrubland, and woody riparian and wetlands vegetation communities.

IBA and BHCA Habitats

The types of impacts to IBA and BHCA habitats under Alternative IV-A would be the same as those described for Alternative I-A, but would differ in the amount and type of habitat disturbed. No impacts would occur to IBAs under Alternative IV-A. Potential direct impacts to BHCAs under Alternative IV-A would include construction and operation impacts to approximately 63 acres and 13 acres, respectively, of avian habitats with high conservation value. These areas represent 0.06 percent and 0.01 percent of

BHCAs within the Region IV analysis area. Potential indirect impacts to BHCAs under Alternative IV-A would occur to 5,724 acres, which represent 5.86 percent of BHCAs in the Region IV analysis area (**Tables 3.22-83** and **3.22-87**).

Table 3.22-83 presents the total potential impacts to priority habitats within IBAs and BHCAs that would occur under Alternative IV-A. **Table 3.22-84** presents a summary of potential impacts to priority habitats within IBAs and BHCAs for this alternative. Also presented are acreages of each vegetation community that are co-located with existing aboveground utilities. Operational impacts such as long-term habitat fragmentation are anticipated to be reduced along co-located portions of an alternative as migratory bird habitat in these areas has already been fragmented by existing transmission lines.

Migratory Bird Species

Impacts to migratory bird species under Alternative IV-A would vary in conjunction with the amount and type of habitat that is disturbed, which is presented in **Table 3.22-85**. **Table 3.22-82** presents the length of Alternative IV-A, which provides a measure of collision potential with the transmission line and associated structures. Also presented are the length and density of existing roads, which provide a measure of collision potential with vehicles and equipment. The density of existing roads within the Region IV potential disturbance areas also is an indicator of current habitat fragmentation along each alternative route.

Raptors, particularly juveniles, and other large species are particularly susceptible to collision (APLIC 2012).The number of raptor nests in proximity to Project potential disturbance areas is one indicator of habitat quality and collision potential and can be compared among alternatives. Raptor nest data is incomplete along Alternative IV-A and only one known prairie falcon nest is reported within 1 mile of the potential disturbance areas.

Table 3.22-86 presents the BCC and PIF species that could nest, forage, or winter in the Region IV analysis area and could be impacted by the Project. **Table 3.22-84** presents a summary of migratory bird analysis parameters along Alternative IV-A.

Design features and additional mitigation measures applicable to avoiding and minimizing impacts to migratory bird species and associated habitats are the same as those identified for Alternative I-A. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to migratory bird species and habitats would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during maintenance activities.

Table 3.22-83 Region IV Alternative Route Impact Parameters

Parameter	Alternative IV-A			Alternative IV-B			Alternative IV-C		
	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts
Migratory Bird Species									
Migratory bird potential habitat (acres)[1]	392	89	39,440	361	86	38,516	386	88	38,783
Percentage of potential habitat within the Region IV analysis area	0.04	0.01	4.41	0.04	0.01	4.30	0.04	0.01	4.33
Relative Collision Potential for Migratory Birds									
Length of transmission line (miles)[2]	37			40			44		
Raptor Nests[3]									
Number within 1 mile of the potential disturbance areas[4]	1			1			1		
Bird Habitat Conservation Areas									
NV-5: Lower Muddy River BHCA (acres)	63	13	5,724	163	47	14,023	163	47	14,023
Percentage of existing NV-5: Lower Muddy River BHCA habitat within the Region IV analysis area	0.06	0.01	5.86	0.17	0.05	14.36	0.17	0.05	14.36
NV-7: Piute/Eldorado/ Fenner DWMA BHCA (acres)	–	–	–	–	–	–	45	9	7,100
Percentage of existing NV-7: Piute/Eldorado/Fenner DWMA within the Region IV analysis area	–	–	–	–	–	–	0.01	<0.01	2.22
Audubon Important Bird Areas									
5 - Lake Mead NRA IBA (acres)	–	–	–	4	2	2,009	4	2	2,009
Percentage of existing 5 - Lake Mead NRA IBA within the Region IV analysis area	–	–	–	0.01	<0.01	3.14	0.01	<0.01	3.14
Migratory Bird Habitat									
Barren/Sparsely Vegetated	27	5	2,467	39	9	3,988	40	9	3,988
Percentage of potential habitat within the Region IV analysis area	0.08	0.01	7.57	0.12	0.03	12.24	0.12	0.03	12.24
Cliff and Canyon[5]	19	5	2,002	13	3	1,271	13	3	1,106
Percentage of potential habitat within the Region IV analysis area	0.03	0.01	3.51	0.02	<0.01	2.23	0.02	<0.01	1.94
Desert Shrubland[5]	339	77	34,392	298	71	30,690	321	73	30,823

Table 3.22-83 Region IV Alternative Route Impact Parameters

Parameter	Alternative IV-A			Alternative IV-B			Alternative IV-C		
	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts
Percentage of potential habitat within the Region IV analysis area	0.05	0.01	4.77	0.04	0.01	4.26	0.04	0.01	4.28
Ephemeral Wash	5	1	419	1	<1	263	1	<1	298
Percentage of potential habitat within the Region IV analysis area	0.20	0.04	16.26	0.04	0.01	10.20	0.06	0.02	11.56
Herbaceous Wetland[5]	–	–	26	1	<1	118	1	<1	118
Percentage of potential habitat within the Region IV analysis area	<0.01	<0.01	3.59	0.13	0.04	16.40	0.13	0.04	16.40
Open Water[5]	–	–	2	3	2	1,782	3	2	1,782
Percentage of potential habitat within the Region IV analysis area	–	–	<0.01	<0.01	<0.01	2.59	<0.01	<0.01	2.59
Saltbush Shrubland[5]	1	<1	129	1	<1	110	3	1	374
Percentage of potential habitat within the Region IV analysis area	0.07	0.01	6.76	0.06	0.01	5.73	0.15	0.03	19.54
Woody Riparian and Wetlands[5]	–	–	5	4	1	294	4	1	294
Percentage of potential habitat within the Region IV analysis area	<0.01	<0.01	0.43	0.37	0.11	26.84	0.38	0.11	26.84

[1] All vegetation communities and land forms defined for the Project constitute migratory bird potential habitat except the developed/disturbed community. Although the developed/disturbed land cover type is not considered to be suitable avian habitat and is not included in analyses or reported disturbance acreages, some disturbance-tolerant species utilize these areas. Further discussion of these vegetation communities is included in Section 3.5.6, Impacts to Vegetation.

[2] Length refers to length of 600-kV transmission lines and provides a measure of avian collision potential.

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

[4] Nests of unknown raptor species are tabulated in both Sections 3.8 and 3.22 because they may have been utilized by either special status or non-special status raptor species.

[5] Region IV priority habitats, as identified in the Nevada SWAP and PIF Bird Conservation Plan.

Table 3.22-84 Alternative IV-A Migratory Bird Habitat Analysis Parameters

Alternative IV-A Differentiating Metrics	Total (acres)	Rank among Region IV Alternatives Greatest Impact = 1 Least Impact = 3
Total Indirect Impacts to Priority Habitats	36,556	1
Total Indirect Impacts to Non-sagebrush Priority Habitats	36,556	1
Total Indirect Impacts to Wetland/Riparian/Open Water Priority Habitats	33	3
Total Indirect Impacts to Priority Habitats along Non-co-located Segments	21,886	2
Total Construction Impacts to Priority Habitats	360	1
Total Operation Impacts to Priority Habitats	83	1
Total Indirect Impacts to IBA Priority Habitats	–	3
Total Indirect Impacts to BHCA Priority Habitats	2,373	3
Total Length of Alternative	37 miles	3

Table 3.22-85 Alternative IV-A Priority Habitat Analysis

Alternative IV-A Priority Habitats	Construction Impacts to Priority Habitats (acres)	Operation Impacts to Priority Habitats (acres)	Indirect Impacts to Priority Habitats (acres)	Percentage of Existing Priority Habitats Indirectly Impacted within Region IV Analysis Area	Indirect Impacts to IBA Priority Habitats (acres)	Indirect Impacts to BHCA Priority Habitats (acres)	Indirect Impacts to Priority Habitats along Non-co-located Segments[1] (acres)	Percentage of Priority Habitats along Non-co-located Segments[1]
Cliff and Canyon	19	5	2,002	3.5	–	182	1,489	74
Desert Shrubland	339	77	34,392	4.8	–	2,187	20,298	59
Herbaceous Wetland	<1	<1	26	3.6	–	2	23	90
Montane Shrubland								
Open Water	–	–	2	<0.1	–	–	2	100
Saltbush Shrubland	1	<1	129	6.8	–	–	70	54
Woody Riparian and Wetlands	<1	<1	5	0.4	–	2	3	72
Total	**360**	**83**	**36,556**		**0**	**2,373**	**21,885**	

[1] Non-co-located construction refers to areas that are not co-located with existing aboveground utilities.

Table 3.22-86 Region IV Priority Habitats within IBAs and BHCAs

Priority Habitat	Lake Mead NRA IBA (acres)	NV-5 Lower Muddy River BHCA (acres)	NV-7 Piute/Eldorado/Fenner DWMA BHCA (acres)
Cliff and Canyon	499	4,785	13,836
Desert Shrubland	14,369	91,030	238,469
Herbaceous Wetland	198	608	20
Montane Shrubland	–	1,942	–
Open Water	48,292	49,755	4,397
Saltbush Shrubland	–	1,759	586
Woody Riparian and Wetlands	246	6,466	127
Total	**63,604**	**156,344**	**257,436**

Table 3.22-87 Region IV Impacts to IBA and BHCA Habitats

IBA and BHCA Habitats	Alternative IV-A (acres)			Alternative IV-B (acres)			Alternative IV-C (acres)		
	Construction	Operation	Indirect	Construction	Operation	Indirect	Construction	Operation	Indirect
NV-5: Lower Muddy River BHCA	63	13	5,724	163	47	14,023	163	47	14,023
NV-7: Piute/Eldorado/Fenner DWMA BHCA	–	–	–	–	–	–	45	9	7,100
Lake Mead NRA IBA	–	–	–	4	2	2,009	4	2	2,009

Alternative IV-B

Habitat Disturbance and Fragmentation

Alternative IV-B would cross approximately 40 miles of migratory bird habitat in Nevada. Approximately 30 miles (75 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.22-82**. Existing conditions within the Alternative IV-B disturbance areas relative to migratory birds can be characterized as highly disturbed and fragmented. Alternative IV-B is disturbed by four major highways: SR-147, SR-564, US-93, and US-95, as well as many other city and county roads within the potential disturbance areas. Major sources of disturbance within the Alternative IV-B potential disturbance areas include the northern portion of Boulder City, the Pabco Gypsum Quarry located northeast of Las Vegas, and low density industrial operations west of Lake Las Vegas. Migratory bird habitat along Alternative IV-B also is fragmented by Lakeshore Road, the River Mountain Loop Trail, and the Historic Railroad hiking trail, which parallel the potential disturbance areas immediately west of Lake Las Vegas. A total of 116 miles of existing roads (2.89 miles of existing roads per mile of alternative) are located within the Alternative IV-B potential disturbance areas, as presented in **Table 3.22-82**. This represents the second highest existing road density and habitat fragmentation within the disturbance areas among Region IV alternatives.

Key Parameters Summary

Migratory Bird Habitat

The types of impacts to migratory bird habitat under Alternative IV-B are described in Section 3.22.6.2, Impacts Common to All Alternative Transmission Line Routes and Associated Components. Potential impacts to migratory bird species and associated habitats under Alternative IV-B would include construction and operation impacts to 361 acres and 86 acres, respectively, of potentially suitable breeding, roosting, foraging, and winter habitats. These areas represent 0.04 percent and 0.01 percent of potentially suitable habitat within the Region IV analysis area. Region IV priority habitats are denoted in **Table 3.22-83** with a footnote and include the cliff and canyon, desert shrubland, herbaceous wetland, montane shrubland, open water, saltbush shrubland, and woody riparian and wetlands vegetation communities.

IBA and BHCA Habitats

The types of impacts to IBA and BHCA habitats under Alternative IV-B would be the same as those described for Alternative I-A, but would differ in the amount and type of habitat disturbed. Potential direct impacts to the Lake Mead NRA IBA would include construction and operation impacts to 4 acres and 2 acres, respectively, of high quality avian habitat. These areas represent 0.01 and <0.01 percent of high quality avian habitat in the Lake Mead IBA within the Region IV analysis area. Potential indirect impacts would occur to 2,009 acres, which represent 3.14 percent of the Lake Mead NRA IBA in the Region IV analysis area.

Potential direct impacts to BHCAs under Alternative IV-B would include construction and operation impacts to approximately 163 acres and 47 acres, respectively, of avian habitats with high conservation value. These areas represent 0.04 percent and 0.01 percent of BHCAs within the Region IV analysis area. Potential indirect impacts to BHCAs under Alternative IV-B would occur to 14,023 acres, which represent 3.36 percent of BHCAs in the Region IV analysis area (**Tables 3.22-83** and **3.22-87**).

Table 3.22-88 presents the total potential impacts to priority habitats within IBAs and BHCAs that would occur under Alternative IV-B. **Table 3.22-89** presents a summary of potential impacts to priority habitats within IBAs and BHCAs for this alternative. Also presented are acreages of each vegetation community that are co-located with existing aboveground utilities. Operational impacts such as long-term habitat fragmentation are anticipated to be reduced along co-located portions of an alternative as migratory bird habitat in these areas has already been fragmented by existing transmission lines.

Table 3.22-88 Alternative IV-B Migratory Bird Habitat Analysis Parameters

Alternative IV-B Differentiating Metrics	Total (acres)	Rank among Region IV Alternatives Greatest Impact = 1 Least Impact = 3
Total Indirect Impacts to Priority Habitats	34,265	3
Total Indirect Impacts to Non-sagebrush Priority Habitats	34,265	3
Total Indirect Impacts to Wetland/Riparian/Open Water Priority Habitats	2,194	1
Total Indirect Impacts to Priority Habitats along Non-co-located Segments	22,087	1
Total Construction Impacts to Priority Habitats	321	3
Total Operation Impacts to Priority Habitats	77	3
Total Indirect Impacts to IBA Priority Habitats	3,017	1
Total Indirect Impacts to BHCA Priority Habitats	22,296	2
Total Length of Alternative	40 miles	2

Table 3.22-89 Alternative IV-B Priority Habitat Analysis

Alternative IV-B Priority Habitats	Construction Impacts to Priority Habitats (acres)	Operation Impacts to Priority Habitats (acres)	Indirect Impacts to Priority Habitats (acres)	Percentage of Existing Priority Habitats Indirectly Impacted within Region IV Analysis Area	Indirect Impacts to IBA Priority Habitats (acres)	Indirect Impacts to BHCA Priority Habitats (acres)	Indirect Impacts to Priority Habitats along Non-co-located Segments[1] (acres)	Percentage of Priority Habitats along Non-co-located Segments[1]
Cliff and Canyon	13	3	1,271	2.2	–	278	794	62
Desert Shrubland	298	71	30,690	4.3	573	19,007	19,127	62
Herbaceous Wetland	1	<1	118	16.4	25	107	109	93
Montane Shrubland								
Open Water	3	2	1,782	2.6	2,399	2,551	1,738	98
Saltbush Shrubland	1	<1	110	5.7	–	–	72	66
Woody Riparian and Wetlands	4	1	294	26.8	20	353	247	84
Total	**321**	**77**	**34,265**		**3,107**	**22,296**	**22,087**	

[1] Non-co-located construction refers to areas that are not co-located with existing aboveground utilities.

Migratory Bird Species

Impacts to migratory bird species under Alternative IV-B would vary in conjunction with the amount and type of habitat that is disturbed. **Table 3.22-82** presents the length of Alternative IV-B, which provides a measure of collision potential with the transmission line and associated structures. Also presented are the length and density of existing roads, which provide a measure of collision potential with vehicles and equipment. The density of existing roads within the Region IV potential disturbance areas also is an indicator of current habitat fragmentation along each alternative route.

Raptors, particularly juveniles, and other large species are particularly susceptible to collision (APLIC 2012).The number of raptor nests in proximity to Project potential disturbance areas is one indicator of habitat quality and collision potential and can be compared among alternatives. Raptor nest data is incomplete along Alternative IV-B and only one known peregrine falcon nest is reported within 1 mile of the potential disturbance areas.

Table 3.22-88 presents a summary of migratory bird analysis parameters along Alternative IV-B. **Table 3.22-6** presents the BCC and PIF species that could nest, forage, or winter in the Region IV analysis area and could be impacted by the Project.

Design features and additional mitigation measures applicable to avoiding and minimizing impacts to migratory bird species and associated habitats are the same as those identified for Alternative I-A. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to migratory bird species and habitats would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during maintenance activities.

Alternative IV-C

Habitat Disturbance and Fragmentation

Alternative IV-C would cross approximately 44 miles of migratory bird habitat in Nevada. Approximately 35 miles (80 percent) of this alternative would be co-located with existing aboveground utilities, as presented in **Table 3.22-82**. Existing conditions within the Alternative IV-C potential disturbance areas relative to migratory birds can be characterized as highly disturbed and fragmented. Alternative IV-C is disturbed by four major highways: SR-147, SR-564, US-93, and US-95, as well as many other city and county roads within the potential disturbance areas. Major sources of disturbance within the Alternative IV-C potential disturbance areas include the Pabco Gypsum Quarry located northeast of Las Vegas and low density industrial operations west of Lake Las Vegas. Migratory bird habitat along Alternative IV-C also is fragmented by Lakeshore Road, the River Mountain Loop Trail, and the Historic Railroad hiking trail, which parallel the potential disturbance areas immediately west of Lake Las Vegas. A total of 156 miles of existing roads (3.54 miles of existing roads per mile of alternative) are located within the Alternative IV-C potential disturbance areas, as presented in **Table 3.22-82**. This represents the highest existing road density and habitat fragmentation within the potential disturbance areas among Region IV alternatives.

Key Parameters Summary

Migratory Bird Habitat

The types of impacts to migratory bird habitat under Alternative IV-C are described in Section 3.22.6.2, Impacts Common to All Alternative Transmission Line Routes and Associated Components. Potential impacts to migratory bird species and associated habitats under Alternative IV-C would include construction and operation impacts to 386 acres and 88 acres, respectively, of potentially suitable breeding, roosting, foraging, and winter habitats. These areas represent 0.04 percent and 0.01 percent of potentially suitable habitat within the Region IV analysis area. Region IV priority habitats are denoted in **Table 3.22-83** with a footnote and include the cliff and canyon, desert shrubland, herbaceous wetland,

montane shrubland, open water, saltbush shrubland, and woody riparian and wetlands vegetation communities.

IBA and BHCA Habitats

The types of impacts to IBA and BHCA habitats under Alternative IV-C would be the same as those described for Alternative I-A, but would differ in the amount and type of habitat disturbed. Potential direct impacts to the Lake Mead NRA IBA habitat would include construction and operation impacts to approximately 4 acres and 2 acres, respectively, of high quality avian habitats. These areas represent 0.01 and <0.01 percent of the Lake Mead NRA IBA within the Region IV analysis area. Indirect impacts would occur to 2,009 acres, which represent 3.14 percent of the Lake Mead NRA IBA in the Region IV analysis area.

Potential direct impacts to BHCAs under Alternative IV-C would include construction and operation impacts to approximately 208 acres and 56 acres, respectively, of avian habitats with high conservation value. These areas represent 0.05 percent and 0.01 percent of BHCAs within the Region IV analysis area. Potential indirect impacts to BHCAs under Alternative IV-C would occur to 21,123 acres, which represent 5.06 percent of BHCAs in the Region IV analysis area (**Tables 3.22-83** and **3.22-87**).

Table 3.22-90 presents the total potential impacts to priority habitats within IBAs and BHCAs that would occur under Alternative IV-C. **Table 3.22-91** presents a summary of potential impacts to priority habitats within IBAs and BHCAs for this alternative. Also presented are acreages of each vegetation community that are co-located with existing aboveground utilities. Operational impacts such as long-term habitat fragmentation are anticipated to be reduced along co-located portions of an alternative as migratory bird habitat in these areas has already been fragmented by existing transmission lines.

Migratory Bird Species

Impacts to migratory bird species under Alternative IV-C would vary in conjunction with the amount and type of habitat disturbed. **Table 3.22-82** presents the length of Alternative IV-C, which provides a measure of collision potential with the transmission line and associated structures. Also presented are the length and density of existing roads, which provide a measure of collision potential with vehicles and equipment. The density of existing roads within the Region IV potential disturbance areas also is an indicator of current habitat fragmentation along each alternative route.

Raptors, particularly juveniles, and other large species are particularly susceptible to collision (APLIC 2012).The number of raptor nests in proximity to Project potential disturbance areas is one indicator of habitat quality and collision potential and can be compared among alternatives. Raptor nest data is incomplete along Alternative IV-C and only one known peregrine falcon nest is reported within 1 mile of the potential disturbance areas.

Table 3.22-6 presents the BCC and PIF species that could nest, forage, or winter in the Region IV analysis area and could be impacted by the Project. **Table 3.22-90** presents a summary of migratory bird analysis parameters along Alternative IV-C.

Design features and additional mitigation measures applicable to avoiding and minimizing impacts to migratory bird species and associated habitats are the same as those identified for Alternative I-A. After considering design features and proposed mitigation measures, remaining Project construction and operation impacts to migratory bird species and habitats would be limited to habitat loss, fragmentation, mortality from collisions, and disturbance during maintenance activities.

Table 3.22-90 Alternative IV-C Migratory Bird Habitat Analysis Parameters

Alternative IV-C Differentiating Metrics	Total (acres)	Rank among Region IV Alternatives Greatest Impact = 1 Least Impact = 3
Total Indirect Impacts to Priority Habitats	34,497	2
Total Indirect Impacts to Non-sagebrush Priority Habitats	34,497	2
Total Indirect Impacts to Wetland/Riparian/Open Water Priority Habitats	2,194	2
Total Indirect Impacts to Priority Habitats along Non-co-located Segments	21,833	3
Total Construction Impacts to Priority Habitats	345	2
Total Operation Impacts to Priority Habitats	79	2
Total Indirect Impacts to IBA Priority Habitats	3,017	1
Total Indirect Impacts to BHCA Priority Habitats	23,074	1
Total Length of Alternative	44 miles	1

Table 3.22-91 Alternative IV-C Priority Habitat Analysis

Alternative IV-C Priority Habitats	Construction Impacts to Priority Habitats (acres)	Operation Impacts to Priority Habitats (acres)	Indirect Impacts to Priority Habitats (acres)	Percentage of Existing Priority Habitats Indirectly Impacted within Region IV Analysis Area	Indirect Impacts to IBA Priority Habitats (acres)	Indirect Impacts to BHCA Priority Habitats (acres)	Indirect Impacts to Priority Habitats along Non-co-located Segments[1] (acres)	Percentage of Priority Habitats along Non-co-located Segments[1]
Cliff and Canyon	13	3	1,106	1.9	–	278	709	64
Desert Shrubland	321	73	30,823	4.3	573	19,664	18,940	94
Herbaceous Wetland	1	<1	118	16.4	25	107	109	93
Montane Shrubland								
Open Water	3	2	1,782	2.6	2,399	2,551	1,738	98
Saltbush Shrubland	3	1	374	19.5	–	121	90	24
Woody Riparian and Wetlands	4	1	294	26.8	20	353	247	84
Total	**345**	**79**	**34,497**		**3,017**	**23,074**	**21,833**	

[1] Non-co-located construction refers to areas that are not co-located with existing aboveground utilities.

Alternative Variations in Region IV

The types of impacts to migratory bird species under the Marketplace Alternative Variation in Region IV would be the same as the comparable portions of Alternative IV-B, but would differ in the amount and type of habitat disturbed (**Table 3.22-92**). Similar to the comparable portions of Alternative IV-B, after considering design features and mitigation measures, impacts to migratory bird species and associated habitats from Project construction and operation would be limited primarily to habitat loss, fragmentation, mortality from collisions, and disturbance during routine maintenance activities.

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

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. **Table 3.22-93** summarizes impacts associated with the alternative connectors in Region IV.

Region IV Conclusion

Based on a comparison of impact parameters for Region IV alternatives, potential direct and indirect impacts to migratory bird species and habitats would be greatest for Alternative IV-C, as presented in **Table 3.22-94**. Alternative IV-C would result in the greatest direct impact to priority avian habitats. This is due to the fact that the largest acreage of priority habitats for migratory birds is located within the areas potentially impacted by this alternative. Alternative IV-A would result in the least impact to migratory birds and habitats according to the established metrics.

Alternatives IV-B and IV-C would result in impacts to Audubon IBA habitats. The greatest impact to BHCA priority habitats in the Region IV potential disturbance areas would occur under Alternative IV-C. The greatest amount of herbaceous wetland, open water, and woody riparian and wetland habitat in the Region IV potential disturbance area would occur under Alternative IV-B.

For this analysis, the occurrence of priority habitats for migratory birds serves as an indicator of migratory bird use and BCC and PIF species occurrence potential in Region IV. Project impacts on migratory bird, BCC, and PIF species and associated habitats would be avoided or considered to be low in magnitude and short-term in duration after implementing BMPs, design features, and additional mitigation measures (Section 3.22.6 and **Appendix C**).

A total of 11 BCC and PIF species have high potential to occur within Region IV priority habitats. These species have potential to occur in priority habitats present along all alternatives; thus a comparison between alternatives of this parameter is not possible. A total of 9 BCC and PIF species have moderate potential to occur within Region IV priority habitats and a total of 15 BCC and PIF species have low potential to occur in Region IV priority habitats. Among the BCC and PIF species that could occur in the habitats present in Region IV, a total of 17 species are considered habitat obligates, both of priority and non-priority vegetation communities. These species could be disproportionately impacted by disturbance in the following habitat types, particularly relative to nesting habitat.

Table 3.22-92 Region IV Alternative Variation Impact Parameters

Impact Parameters	Marketplace Alternative Variation			Comparable Portion of Alternative IV-B		
	Construction Impacts	Operation Impacts	Indirect Impacts	Construction Impacts	Operation Impacts	Indirect Impacts
Migratory Bird Habitat						
Total migratory bird potential habitat (acres)[1]	49	9	4,979	–	–	1,784
Percentage of potential habitat within the Region IV analysis area	0.01	<0.01	0.56	–	–	0.20
Relative Collision Potential for Migratory Birds						
Length of transmission line (miles)[2]	8			7		
Raptor Nests (Non-special Status)[3]						
Number of raptor nests within 1 mile of the potential disturbance areas[4]	–	–	–	–	–	–
Bird Habitat Conservation Areas						
No BHCAs are within the 250-foot-wide transmission line ROW	–	–	–	–	–	–
Audubon Important Bird Areas						
No IBAs are within the 250-foot-wide transmission line ROW.	–	–	–	–	–	–
Migratory Bird Habitat						
Barren/Sparsely Vegetated	–	–	–	–	–	–
Cliff and Canyon[5]	1	<1	146	–	–	–
Desert Shrubland[5]	48	9	4,833	<1	<1	1,784
Ephemeral Wash	–	–	–	–	–	–
Herbaceous Wetland[5]	–	–	–	–	–	–
Open Water[5]	–	–	–	–	–	–
Saltbush Shrubland[5]	–	–	–	–	–	–
Woody Riparian and Wetlands[5]	–	–	–	–	–	–

1 All vegetation communities and land forms defined for the Project constitute migratory bird potential habitat except the developed/disturbed community. Although the developed/disturbed land cover type is not considered to be suitable avian habitat and is not included in analyses or reported disturbance acreages, some disturbance-tolerant species utilize these areas. Further discussion of these vegetation communities is included in Section 3.5.6, Impacts to Vegetation.

2 Length refers to length of 600-kV transmission lines and provides a measure of avian collision potential.

3 Special status species are discussed in Section 3.8, Special Status Wildlife Species.

4 Nests of unknown raptor species are tabulated in both Sections 3.8 and 3.22 because they may have been utilized by either special status or non-special status raptor species.

5 Region IV priority habitats, as identified in the Nevada SWAP and PIF Bird Conservation Plan.

Table 3.22-93 Region IV Alternative Connector Impact Parameters

Alternative Connector	Analysis
Sunrise Mountain Alternative Connector	• Approximately 3 miles in length.[1] • Approximately 51 acres of construction, 8 acres of operation, and 5,815 acres of indirect impacts to migratory bird potential habitat would occur. • No construction or operation impacts to IBAs of BHCAs would occur. • No raptor nests are within 1 mile of the potential disturbance areas. • Acres of construction, operation, and indirect impacts to Region IV priority habitats: – Approximately 26 acres of construction, 4 acres of operation, and 2,617 acres of indirect impacts to barren/sparsely vegetated cliff and canyon habitat would occur. – Approximately 1 acre of construction, <1 acre of operation, and 258 acres of indirect impacts to cliff and canyon habitat would occur. – Approximately 23 acres of construction, 4 acres of operation, and 2,795 acres of indirect impacts to desert shrubland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 106 acres of indirect impacts to ephemeral wash habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 11 acres of indirect impacts to herbaceous wetland habitat would occur. – No direct or indirect impacts to montane shrubland habitat would occur. – No direct or indirect impacts to open water habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 28 acres of indirect impacts to saltbush shrubland habitat would occur. – No direct or indirect impacts to woody riparian and wetlands habitat would occur.
Lake Las Vegas Alternative Connector	• Approximately 4 miles in length.[1] • Approximately 59 acres of construction, 16 acres of operation, and 5,426 acres of indirect impacts to migratory bird potential habitat would occur. • No construction or operation impacts to IBAs would occur; approximately 42 acres of indirect impacts to IBAs would occur. • Approximately 75 acres of construction, 20 acres of operation, and 7,089 acres of indirect impacts to the Lower Muddy River BHCA would occur. • No raptor nests are within 1 mile of the potential disturbance areas. • Acres of construction, operation, and indirect impacts to Region IV priority habitats: – Approximately 2 acres of construction, <1 acre of operation, and 138 acres of indirect impacts to barren/sparsely vegetated habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 53 acres of indirect impacts to cliff and canyon habitat would occur. – Approximately 57 acres of construction, 15 acres of operation, and 5,164 acres of indirect impacts to desert shrubland habitat would occur. – No direct or indirect impacts to ephemeral wash habitat would occur. – No direct and approximately 15 acres of indirect impacts to herbaceous wetland habitat would occur. – No direct or indirect impacts to montane shrubland habitat would occur. – No direct and approximately 11 acres of indirect impacts to open water habitat would occur. – No direct or indirect impacts to saltbush shrubland habitat would occur. – No direct or indirect impacts to woody riparian and wetlands habitat would occur.
Three Kids Mine Alternative Connector	• Approximately 5 miles in length.[1] • Approximately 73 acres of construction, 21 acres of operation, and 7,567 acres of indirect impacts to migratory bird potential habitat would occur. • No construction or operation impacts to IBAs would occur; approximately 44 acres of indirect impacts to IBAs would occur. • Approximately 59 acres of construction, 17 acres of operation, and 6,597 acres of indirect impacts to the Lower Muddy River BHCA would occur. • No raptor nests are within 1 mile of the potential disturbance areas. • Acres of construction, operation, and indirect impacts to Region IV priority habitats: – No direct or indirect impacts to barren/sparsely vegetated habitat would occur. – Approximately 2 acres of construction, <1 acre of operation, and 90 acres of indirect impacts to cliff and canyon habitat would occur.

Table 3.22-93 Region IV Alternative Connector Impact Parameters

Alternative Connector	Analysis
	– Approximately 71 acres of construction, 20 acres of operation, and 7,305 acres of indirect impacts to desert shrubland habitat would occur. – No direct or indirect impacts to ephemeral wash habitat would occur. – No direct and approximately 15 acres of indirect impacts to herbaceous wetland habitat would occur. – No direct or indirect impacts to montane shrubland habitat would occur. – No direct and approximately 11 acres of indirect impacts to open water habitat would occur. – No direct or indirect impacts to saltbush shrubland habitat would occur. – No direct or indirect impacts to woody riparian and wetlands habitat would occur.
River Mountains Alternative Connector	• Approximately 8 miles in length.[1] • Approximately 152 acres of construction, 53 acres of operation, and 12,612 acres of indirect impacts to migratory bird potential habitat would occur. • No construction or operation impacts to IBAs would occur; approximately 118 acres of indirect impacts to IBAs would occur. • Approximately 1 acre of construction, <1 acre of operation, and 1,398 acres of indirect impacts to the Lower Muddy River BHCA would occur. • No raptor nests are within 1 mile of the potential disturbance areas. • Acres of construction, operation, and indirect impacts to Region IV priority habitats: – Approximately 1 acre of construction, <1 acre of operation, and 60 acres of indirect impacts to barren/sparsely vegetated habitat would occur. – Approximately 7 acres of construction, 3 acres of operation, and 795 acres of indirect impacts to cliff and canyon habitat would occur. – Approximately 144 acres of construction, 50 acres of operation, and 11,495 acres of indirect impacts to desert shrubland habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 17 acres of indirect impacts to ephemeral wash habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 17 acres of indirect impacts to grassland habitat would occur. – No direct and approximately 1 acre of indirect impacts to herbaceous wetland habitat would occur. – No direct or indirect impacts to montane shrubland habitat would occur. – No direct and approximately 144 acres of indirect impacts to open water habitat would occur. – No direct or indirect impacts to saltbush shrubland habitat would occur. – No direct and approximately 84 acres of indirect impacts to woody riparian and wetlands habitat would occur.
Railroad Pass Alternative Connector (Alts IV-A & IV-B)	• Approximately 4 miles in length.[1] • Approximately 10 acres of construction, 4 acres of operation, and 2,566 acres of indirect impacts to migratory bird potential habitat would occur. • No construction or operation impacts to IBAs or BHCAs would occur. • No raptor nests are within 1 mile of the potential disturbance areas. • Acres of construction, operation, and indirect impacts to Region IV priority habitats: – Approximately <1 acre of construction, <1 acre of operation, and 1 acre of indirect impacts to barren/sparsely vegetated habitat would occur. – Approximately <1 acre of construction, <1 acre of operation, and 138 acres of indirect impacts to cliff and canyon habitat would occur. – Approximately 9 acres of construction, 4 acres of operation, and 2,428 acres of indirect impacts to desert shrubland habitat would occur. – No direct or indirect impacts to ephemeral wash habitat would occur. – No direct or indirect impacts to herbaceous wetland habitat would occur. – No direct or indirect impacts to montane shrubland habitat would occur – No direct or indirect impacts to open water habitat would occur. – No direct or indirect impacts to saltbush shrubland habitat would occur. – No direct or indirect impacts to woody riparian and wetlands habitat would occur.

[1] Length refers to length of transmission lines and provides a measure of avian collision potential.

Table 3.22-94 Region IV Composite Metric Rank Scores

Metric Rank among Region IV Alternatives Greatest Impact = 1; Least Impact = 3	Alternative IV-A	Alternative IV-B	Alternative IV-C
Total Indirect Impacts to Priority Habitats	1	3	2
Total Indirect Impacts to Non-sagebrush Priority Habitats	1	3	2
Total Indirect Impacts to Wetland/Riparian/Open Water Priority Habitats	3	1	2
Total Priority Habitats in Potential Disturbance Area that are Not Co-located	2	1	3
Total Construction Impacts to Priority Habitats	1	3	2
Total Operation Impacts to Priority Habitats	1	3	2
Total Indirect Impacts to IBA Priority Habitats	3	1	1
Total Indirect Impacts to BHCA Priority Habitats	3	2	1
Total Length of Alternative	3	2	1
Composite Score	18	19	16

- Cliff and canyon: peregrine falcon, golden eagle, ferruginous hawk, prairie falcon, and white-throated swift;
- Desert shrubland: Costa's hummingbird, Gila woodpecker, gilded flicker, verdin, cactus wren, and black-tailed gnatcatcher;
- Open water, herbaceous wetland, woody riparian and wetlands: eared grebe, least bittern, bald eagle, willow flycatcher, yellow warbler, and yellow-headed blackbird; and
- Saltbush shrubland: none.

Specific criteria and rationale for the designation of IBAs and BHCAs is discussed in Section 3.22.4.1. Audubon IBAs and BHCAs serve as additional indicators of priority avian habitats across Project alternatives. **Table 3.22-87** presents impacts to the Lake Mead NRA IBA, Lower Muddy River BHCA, and Piute/Eldorado/Fenner DWMA BHCA, by alternative. The Lake Mead NRA IBA would be traversed by Alternatives IV-B and IV-C, resulting in the same disturbance acreage for both alternatives as presented in **Table 3.22-87**. No other IBAs would be within Region IV potential disturbance areas. **Table 3.22-86** provides a summary of the acreages of priority habitats existing within IBAs and BHCAs in Region IV potential disturbance areas. Alternative IV-C would impact the greatest amount of IBA and BHCA habitats in comparison to other Project alternatives.

Impacts from the Project to migratory birds would be expected to result primarily from habitat loss, alteration, and fragmentation. The impacts, design features, and mitigation measures described under Region I Conclusion also would apply to Region IV migratory bird species. Most BCC and PIF species that occur in Region IV are likely to be adversely affected by increased habitat fragmentation. Several segments of the Project are proposed to be co-located with existing aboveground utilities. These areas are already impacted by habitat fragmentation and are considered when comparing Project alternatives. Alternative IV-C would result in the fewest acres of newly fragmented priority habitat as it is co-located with other existing transmission lines for approximately 87 percent of its proposed alignment. In Region IV, Alternative IV-C would have the longest length in comparison to other Project alternatives. Therefore, it can be concluded that Alternative IV-C would pose the greatest collision risk to avian species relative to other Project alternatives.

Notable Species-Specific Conclusions

Several BCC and/or PIF species were selected for additional analysis as examples from each priority habitat present in the Region IV analysis area. Factors considered in this selection include whether the species is an obligate of the priority habitat, its potential for occurrence in the Region IV analysis area, its state or federal status, and whether the species' geographic range is limited to the Region IV analysis area rather than inclusive of other Project regions. Additionally, raptor and non-raptor species; and migratory and non-migratory species were analyzed.

Cliff and Canyon Species

A variety of migratory bird species inhabits cliff and canyon habitat in Region IV, including 5 BCC and PIF species. The golden eagle, peregrine falcon, ferruginous hawk, prairie falcon, and white-throated swift require cliff and canyon habitat for nesting. The peregrine falcon and white-throated swift were selected as examples for this priority habitat in Region IV. These species are discussed in Section 3.22.5. Both species have moderate potential to occur in the Region IV analysis area.

Impacts from the Project to these and other species that utilize cliff and canyon habitat include loss or alteration of nesting habitat and collision potential. The impacts, design features, and mitigation measures described under Region I Conclusion also would apply to Region IV migratory bird species. The greatest amount of cliff and canyon habitat within the potential disturbance area occurs under Alternative IV-A. A total of 26 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation. The least amount of cliff and canyon habitat within the potential disturbance area occurs under Alternative IV-C. A total of 36 percent of this habitat occurs where this alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation.

Desert Shrubland Species

A variety of migratory bird species inhabits desert shrubland habitat in Region IV, including 22 BCC and PIF species. The Gambel's quail and cactus wren were selected as examples for this priority habitat in Region IV. These species are discussed in Section 3.22.5. Both species have high potential to occur in the Region IV analysis area.

Impacts from the Project on these and other species that could utilize desert shrubland habitat would be expected to result primarily from habitat loss, alteration, and fragmentation. The impacts, design features, and mitigation measures described under Region I Conclusion also would apply to Region IV migratory bird species. The greatest amount of desert shrubland habitat within the potential disturbance area occurs under Alternative IV-A. A total of 41 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation. The least amount of desert shrubland habitat within the potential disturbance area occurs under Alternative IV-B. A total of 38 percent of this habitat occurs where this alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation.

Herbaceous Wetland Species

A variety of migratory bird species inhabits the herbaceous wetland community in Region IV, including 5 BCC and PIF species. The yellow-headed blackbird and least bittern were selected as examples for this priority habitat in Region IV. These species are discussed in Section 3.22.3. Both species have low potential to occur in the Region IV analysis area.

Impacts from the Project to these and other species that utilize herbaceous wetland habitat would be expected to result primarily from habitat loss, alteration, and fragmentation. The impacts, design features, and mitigation measures described under Region I Conclusion also would apply to Region IV migratory bird species. Impacts to herbaceous wetlands would be avoided or minimized by spanning these habitats to the extent practicable. To the extent that impacts to jurisdictional wetlands are

unavoidable and require a 404 permit, compensatory mitigation would be required to replace Project impacts to wetland functions, including migratory bird habitat. The greatest amount of herbaceous wetland habitat within the potential disturbance area occurs under Alternatives IV-B and IV-C. A total of 7 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation. The least amount of herbaceous wetland habitat within the potential disturbance area occurs under Alternative IV-A. A total of 10 percent of this habitat occurs where this alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation.

Open Water Species

A variety of migratory bird species forages in and over open water habitat, including 3 BCC and PIF species. The bald eagle and eared grebe were selected as examples for this priority habitat in Region IV. The bald eagle is analyzed in detail in Section 3.8, Special Status Wildlife Species. The eared grebe is discussed in Section 3.22.3. The bald eagle has low potential to occur and the eared grebe has high potential to occur in the Region IV analysis area.

Impacts from the Project to these and other species that utilize open water habitat would be expected to result primarily from habitat loss, alteration, and fragmentation. The impacts, design features, and mitigation measures described under Region I Conclusion also would apply to Region IV migratory bird species. Impacts to open water and surrounding vegetation would be avoided or minimized by spanning these habitats to the extent practicable. To the extent that impacts to jurisdictional wetlands are unavoidable and require a 404 permit, compensatory mitigation would be required to replace Project impacts to wetland functions, including migratory bird habitat. The greatest amount of open water habitat within the potential disturbance area occurs under Alternatives IV-B and IV-C. A total of 2 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation. The least amount of open water habitat within the potential disturbance area occurs under Alternative IV-A. All of this habitat would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation.

Saltbush Shrubland Species

A variety of migratory bird species inhabits the saltbush shrubland community in Region IV, including nine BCC and PIF species. The burrowing owl and crissal thrasher were selected as examples for this priority habitat in Region IV. The burrowing owl is discussed in Section 3.22.3 and has a high potential to occur in the Region IV analysis area.

Crissal Thrasher

The crissal thrasher is non-migratory and could occur in the Region IV analysis area throughout the year. The species is designated as a Utah SGCN-Tier III and a PIF Species of Conservation Importance. The crissal thrasher has high potential to occur in the Region IV analysis area.

The crissal thrasher completes its entire life cycle in desert shrubland and ephemeral wash habitats. Primary threats to the species include habitat loss, alteration, and fragmentation (Cody 1999). Proximity to humans increases the likelihood of secondary predation by domestic and feral cats.

Impacts from the Project to these and other species that could utilize saltbush shrubland habitat would be expected to result primarily from habitat loss, alteration, and fragmentation. The impacts, design features, and mitigation measures described under Region I Conclusion also would apply to Region IV migratory bird species. The greatest amount of saltbush shrubland habitat within the potential disturbance area occurs under Alternative IV-C. A total of 76 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation. The least amount of saltbush shrubland habitat within the potential disturbance area occurs under Alternative IV-B. A total of 34 percent of this habitat occurs where this alternative

would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation.

Woody Riparian and Wetlands Species

A variety of migratory bird species inhabits the woody riparian and wetlands community in Region IV, including 18 BCC and PIF species. The phainopepla and Le Conte's thrasher were selected as examples for this priority habitat in Region IV.

Phainopepla

The phainopepla is a short-distance migrant and could occur in the Region IV analysis area throughout the year. The species is designated as a PIF Species of Conservation Importance. The phainopepla has high potential to occur in the Region IV analysis area.

The phainopepla completes its entire life cycle in desert shrubland and woody riparian habitat. Primary threats to the species include habitat loss, alteration, and fragmentation, particularly of riparian habitat. Brown-headed cowbird nest parasitism also is a threat (Chu and Walsberg 1999). Brown-headed cowbird populations would be expected to proliferate with an increase in habitat fragmentation and the associated creation of edge habitat (Lowther 1993). In addition, the cowbird utilizes tall shrubs, fences, and power lines as vantage points from which to observe nesting birds in order to deposit eggs (Johnson et al. 2002). Proximity to humans increases the likelihood of secondary predation by domestic and feral cats.

Gilded Flicker

The gilded flicker is non-migratory and could occur in the Region IV analysis area throughout the year. The species is designated as a Nevada SCP and a BCC. The gilded flicker is considered to be a climate threatened species according to the Audubon Birds and Climate Change Report (National Audubon Society 2014) and may lose over 50 percent of its current climatic range by 2080. The species has high potential to occur in the Region IV analysis area.

The gilded flicker is a ground-foraging species that utilizes a variety of habitats, including saguaro cactus and desert woody riparian vegetation. Primary threats to the species include habitat loss and degradation (Moore 1995). Proximity to humans increases the likelihood of secondary predation by domestic and feral cats.

Impacts from the Project to these and other species that could utilize woody riparian and wetlands habitat would be expected to result primarily from habitat loss and alteration. The impacts, design features, and mitigation measures described under Region I Conclusion also would apply to Region IV migratory bird species. The greatest amount of woody riparian and wetlands habitat within the potential disturbance area occurs under Alternatives IV-B and IV-C. A total of 16 percent of this habitat occurs where the alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation. The least amount of woody riparian and wetlands habitat within the potential disturbance area occurs under Alternative IV-A. A total of 28 percent of this habitat occurs where this alternative would be co-located with existing aboveground utilities, thus reducing the amount of new habitat fragmentation.

This analysis provides a comparison of the number of priority habitat types and the aggregate acreages and proportions of existing priority habitats among the Project alternatives in the Region IV analysis area (**Table 3.22-95**). Alternative IV-A would impact the greatest number and acreages of priority habitats in comparison to other Project alternatives. These potential impacts to priority habitats could result in localized adverse effects to migratory bird species, but are not anticipated to present an imminent threat to the sustainability of BCC and PIF populations within the analysis area due to small proportion of habitats affected and the availability of priority habitat types throughout the analysis area. Discussion of the cumulative impacts of this Project in addition to other development actions is discussed in

Chapter 5.0, Cumulative Impacts. Of the remaining alternatives considered, Alternative IV-B would result in impacts to the lowest amount of priority habitats, according to the defined metrics.

Table 3.22-95 Region IV Alternative Rankings

Metric	Metric Rank among Region IV Alternatives Greatest Impact = 1; Least Impact = 3		
	1	2	3
Total Indirect Impacts to Priority Habitats	IV-A	IV-C	IV-B
Total Indirect Impacts to Non-sagebrush Priority Habitats	IV-A	IV-C	IV-B
Total Indirect Impacts to Wetland/Riparian/Open Water Priority Habitats	IV-B	IV-C	IV-A
Total Priority Habitats in Potential Disturbance Area that are Not Co-located	IV-B	IV-A	IV-C
Total Construction Impacts to Priority Habitats	IV-A	IV-C	IV-B
Total Operation Impacts to Priority Habitats	IV-A	IV-C	IV-B
Total Indirect Impacts to IBA Priority Habitats	IV-B/ IV-C	IV-B/ IV-C	IV-A
Total Indirect Impacts to BHCA Priority Habitats	IV-C	IV-B	IV-A
Total Length of Alternative	IV-C	IV-B	IV-A

Under all proposed Region IV alternatives and components, adverse impacts to migratory birds, including BCC and PIF species, and their habitats would occur. Impacts would vary by species according to species-specific habitat requirements. It is likely that individuals of all migratory bird species in Region IV would be impacted on a temporary and short-term basis during construction. Long-term impacts would vary by species and include, but would not be limited to, the loss or conversion of habitat, increased risk of collision, increased habitat fragmentation, noxious weed invasions, and increased noise and disturbance levels from operation and maintenance activities. These impacts are likely to result in locally reduced nesting attempts and breeding success for multiple species, reduced recruitment, and avoidance of otherwise suitable habitat that has been fragmented by the Project.

3.22.6.7 Residual Impacts

Although it is anticipated that migratory bird mitigation measures would be effectively implemented, some residual impacts to migratory bird species and habitat would occur. Long-term residual impacts to habitat have been quantified and disclosed as operation impact acreages to vegetation communities. Residual impacts would include the loss of vegetation related to the permanent placement of facilities, access roads for the life of the Project, the invasion and spread of noxious weeds and invasive species into previously undisturbed areas, and fragmentation of native habitats. Timeframes for successful reclamation can vary by habitat type and initial impact intensity. Section 3.5.1.1 discusses residual impacts to vegetation communities. Depending on the timing of construction and reclamation success, species that are rare or whose habitat requirements are very specific and limited could be impacted at the local population level. Local migratory bird populations could be impacted by long-term habitat loss, alteration, and fragmentation.

Although mitigation measures to reduce and avoid impacts to migratory bird species are anticipated to be successful, the complete elimination of collision and electrocution risks is not anticipated. Therefore, avian species in the analysis area would experience long-term exposure to collision and, to a much lesser extent, electrocution risks during the life of the Project. Many factors influence collision risk. In general, juvenile birds would be at higher risk of collision than adults (APLIC 2012). With few exceptions, research-based literature necessary to determine and disclose population level impacts to bird species from transmission lines is not available.

Construction and operation of the proposed Project, including operation and maintenance of new access roads, would result in adverse impacts to local migratory bird populations and habitat. Implementation of design features and mitigation measures would minimize these impacts, but residual impacts would still result. Long-term habitat loss, degradation, and fragmentation would occur. These impacts affect all species that occupy a particular habitat. Species that require large intact landscapes are vulnerable not only to changes in local habitat condition, but also to the compounding of multiple threats across the landscape. Other species may not have large home ranges but they are most abundant in areas where large habitat tracts remain intact.

Most BCC and PIF species are likely to be adversely affected by habitat loss and increased habitat fragmentation. Some species could benefit from increased fragmentation if their habitat preference is edges or openings in otherwise contiguous landscape. The effects of habitat fragmentation can be especially detrimental to certain species with life histories that require large areas of undisturbed land. Conversely, habitat fragmentation and human disturbance contribute to the proliferation of species that pose significant threats to other native species. Increased populations of the brown-headed cowbird and European starling would likely result from increased habitat fragmentation, resulting in decreased reproductive success for BCC and PIF species.

Habitat fragmentation generally occurs through habitat loss and involves both a reduction in habitat area and change in habitat distribution. Fragmentation can be considered at a range-wide scale, a population scale, and a home-range scale. Fragmentation at the range-wide scale can affect dispersal between populations; at the population scale, it can alter local population dynamics; and at the home range scale, it can affect individual survival and reproduction (Franklin et al. 2002). At the home range scale, the consequences of habitat loss, degradation, and fragmentation include increased predation rates, decreased reproductive success, and increased brown-headed cowbird parasitism rates (GBBO 2010). These impacts are likely to result in reduced nesting attempts and breeding success for multiple species, reduced recruitment, and incremental reductions in overall local population health and sustainability.

During extended periods of reclamation, it is expected that habitat function would be reduced until reclamation is fully complete. However, achieving plant maturity and full restoration of vegetation communities would require a long time period, during which there would be temporary loss, degradation, and alteration of habitat. Even with successful reclamation to original vegetation communities after decommissioning, variability in plant structure and age would still constitute habitat fragmentation. Habitat fragmentation could result in long-term avian avoidance and displacement. Long-term changes in migratory bird species occurrence and diversity could occur as a result of changes in habitat composition, quality, and continuity. The time required for successful reclamation of all impacted habitats to original species composition, diversity, and age structure may range from 3 to 5 years to 10 to 100 years in certain conditions as described in Section 3.5.6.7, Residual Impacts.

Vegetation recovery to similar cover and species composition after implementation of a reclamation program is expected to occur at varying rates. Reclamation and recovery timeframes for each vegetation cover type are presented in Section 3.5.6.8, Residual Impacts. Some native habitats may not return to pre-construction conditions due to alteration of soil communities, noxious weed invasion, and loss of biological soil crusts. Fragmentation of native habitats and the conversion of vegetation communities may occur over the long term, depending on the success of reclamation and associated disturbance from maintenance activities over the life of the Project. Noxious weed and invasive species may persist over the long term regardless of the implementation of control programs.

3.22.6.8 Irreversible and Irretrievable Commitment of Resources

Construction and operation of any of the Project alternatives would result in the irretrievable commitment of both migratory bird species and potential habitats during the life of the Project. Depending on the selection of alternatives, the amount of migratory bird habitat irretrievably committed would range from 23,984 acres to 29,539 acres. However, as discussed in **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 a relatively short period of time (i.e., 5 years). Other more sensitive habitats, such as sagebrush shrubland, may require up to 50 years or longer to be reclaimed to native conditions. Regardless of timeframes, it is possible that migratory bird habitat impacted during construction could return to pre-project conditions, thus avoiding any irreversible commitments of migratory bird habitat.

3.22.6.9 Relationship between Local Short-term Uses and Long-term Productivity

Migratory bird 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 migratory bird 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 migratory bird habitat as a result of Project construction would be less than 1 percent of available potential habitats within the analysis area.

3.22.6.10 Impacts to Migratory Bird Species 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 constructed. 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 migratory birds and habitats associated with the development of the proposed Project would not occur.