3.6. TERRESTRIAL WILDLIFE

Issue 1: How would the Parkdale Quarry expansion affect the availability and quality of habitat and nesting sites for migratory bird species?

Issue 2: How would the Parkdale Quarry expansion affect the availability and quality of habitat for special status wildlife species?

Issue 3: How would the Parkdale Quarry expansion affect the availability and quality of habitat for bighorn sheep?

3.6.1. Affected Environment

The analysis area for direct and indirect effects on wildlife and aquatic resources is the Mine Plan boundary. The CESAs for wildlife resources are described in Section 3.6.3, *Cumulative Effects Analysis,* and vary depending on the species. CESAs were determined based on wildlife use within the mineral sale regional location and important seasonal habitats for species such as Rocky Mountain bighorn sheep.

Information regarding wildlife species and habitat within the study area and CESAs was obtained from a review of existing published sources, site-specific wildlife and habitat surveys, BLM, CPW, and U.S. Fish and Wildlife Service (USFWS) file information.

3.6.1.1. Existing Habitat

The proposed mineral Sale Area is located near Parkdale, Colorado, adjacent to the existing Parkdale Quarry, and encompasses the southwest side of Cactus Mountain. Elevations in the mineral material Sale Area range from approximately 5,790 ft. to 6,960 ft. Existing wildlife species and habitats are typical of the Front Range foothills of southeastern Colorado (Cedar Creek 1997).

As indicated in Table 3.15, National Land Cover Data (NLCD) indicates that the majority of wildlife habitat in the study area consists primarily of evergreen forest (53 percent) and shrub/scrub (47 percent) (Figure 3.6-1, Appendix C). Field surveys confirmed that the study area is dominated by pinyon-juniper evergreen forest and shrub/scrub consisting predominantly of pinyon pine (*Pinus edulis*), Rocky Mountain juniper (*Juniperus scopulorum),* one-seed juniper *(Juniperus monosporum),* Gambel oak (*Quercus gambelii*) and mountain mahogany (*Cercocarpus montanus*) (ICF 2019). Piñon-juniper habitat in the study area may provide an important supply of pine nuts and juniper berries as a winter food source for wildlife. Wildlife commonly found in the piñon-juniper habitat include western scrub-jay, juniper titmouse, gray flycatcher, blacktail jackrabbit, cliff chipmunk, mule deer and elk. Predators common in this habitat include gray foxes and raptors such as red-tailed hawks (Marcus et. al. 2011).

Mountain scrub/shrubland habitat provides valuable food and cover for many wildlife species. Many shrub species produce edible fruits, and they provide a large selection of forage types. Gambel oak acorns are an important mast crop in many areas. Birds such as band-tailed pigeon, wild turkey, Lewis's woodpecker, Steller's jay, western scrub-jay, and green-tailed towhee feed on the acorns. Other birds such as the Virginia's warbler utilize mountain shrub habitat for resting, feeding, and nesting. Dusky flycatcher, Virginia's warbler, and green-tailed towhee are associated with Gambel oak and other shrub habitat (BLM 2017a).

Table 3.15. National Land Cover Data (NLCD) Designations within the Study Area

Mineral Sale Area	Evergreen Forest (acres)	Shrub/Scrub (acres)	Total[1] (acres)
Phase 1 – West Pit	29.5	51.2	80.7
Phase 2 – West Central Pit	106.5	61.1	167.6
Phase 3 – Central Pit	112.1	124.5	236.6
Phase 4 – East Central Pit	73.4	38.9	112.3
Phase 5 – East Pit	48.7	58.6	107.3
Total	**370.2**	**334.3**	**704.5**

Source: USGS 2016

[1] Totals may vary due to rounding.

The study area consists of very steep rugged terrain. Rock outcrops and cliffs existing in the mineral Sale Area are numerous and may serve as important habitat for yellow-bellied marmot, rock squirrel, bush-tailed woodrat, and swallows. Ledges and cavities in cliff areas could provide suitable nesting habitat for cliff-nesting raptors such as red-tailed hawk, prairie falcon, golden eagle, and great horned owl.

The study area is situated within the fifth level (Hydrologic Unit Code, HUC: 1102000111) Tallahassee Creek-Currant Creek watershed of the Arkansas Headwaters sub-basin (11020001). Perennial streams located within the watershed are Currant Creek, Cottonwood Creek, North Tallahassee Creek, Tallahassee Creek, Thirtyone Mile Creek, Fear Creek, South Tallahassee Creek, Dicks Creek, North Waugh Creek, Paris Creek, Squaw Creek, Middle Tallahassee Creek, Kelly Creek, Freshwater Creek, Salt Creek, and West Waugh Creek. All Perennial/intermittent streams originating from this watershed drain into Tallahassee Creek. Tallahassee Creek is a tributary of Arkansas River (BLM 2017a).

An analysis of National Hydrology Data (NHD) and field surveys confirm that sources of available water for wildlife consumption are limited within the study area (USGS 2019; ICF 2019). Surface water features include a few intermittent streams, Currant Creek, and Tallahassee Creek (Table 3.16**)**. Tallahassee Creek supports narrow strips of mesic meadows and forest/shrub wetland vegetation along its banks. Riparian-specific features include willow and herbaceous riparian habitats (ICF 2019). The majority of the runoff in the study area flows to Currant Creek and

Tallahassee Creek through three main intermittent drainage areas. The Arkansas River is located to the south of the Sale Area and the existing Parkdale Quarry.

Table 3.16. Surface Water and Wetland Resources within the Study Area

Mineral Sale Area	Intermittent Stream (miles)	Riverine Wetlands (acres)
Phase 1 – West Pit	0.28	0.7
Phase 2 – West Central Pit	1.36	3.2
Phase 3 – Central Pit	2.54	6.1
Phase 4 – East Central Pit	0.64	1.5
Phase 5 – East Pit	0.47	1.1
Total	**5.29**	**12.6**

Sources: USGS 2019; USFWS 2019

3.6.1.2. Big Game Species

Big game species are managed by CPW, with range designations and migration corridors for each species delineated across the entire state. CPWs strategic plan defines that game populations are to be managed in accordance with a Data Analysis Unit (DAU) plan. A DAU is the geographic area that represents the year-round range of a big game herd and includes all of the seasonal ranges for a specific herd. Each DAU is typically composed of several Game Management Units (GMU). Mule deer (*Odocoileus hemionus*), bighorn sheep (*O. canadensis canadensis*), black bear (*Ursus americanus*) and mountain lion (*Puma concolor*) are the only big game animals likely to be found in the study area (Cedar Creek 1997). The study area occurs entirely within CPW's Management Area 13, specifically big game hunting unit 58 (CPW 2019a).

Rocky Mountain bighorn sheep and mule deer are the primary big game species within the study area. Mule deer and big horn sheep population numbers fluctuate from year-to-year based on habitat conditions. Limiting factors within the study area include water availability, and amount of suitable quality habitat. Seasonal use and movement patterns in the vicinity of the study area depends on weather and forage availability and quality.

Mule Deer

Mule deer are distributed statewide in all ecosystems in Colorado. They are most abundant in shrublands in rough, broken terrain where abundant food and cover are provided (Cedar Creek 1997). The study area is located within mule deer overall range and severe winter range (Figure 3.6-2 and Figure 3.6-3, Appendix C) (CPW 2019d). Mule deer use of the study area is variable with populations exhibiting seasonal movement as a result of elevational migration in response to snow cover. The majority of the study area is used by mule deer as early spring and winter range, although some may occur in the study area on a year-round basis (BLM 2017a).

The study area is located within CPW's Cripple Creek DAU D-16 and GMU 58 for mule deer (Figure 3.6-2, Appendix C). Herd management of mule deer in D-16 is conducted like most herds in Colorado (CPW 2007). Post-hunt population estimates for 2018 indicate that the mule deer population in D-16 was approximately 13,400 individuals (CPW 2019b). CPWs current population objective for D-16 is to target a post-season population of 16,000 to 20,000 deer with a post-season composition of 30 to 35 bucks/100 does (CPW 2007).

Bighorn Sheep

Bighorn sheep utilize the areas in and around the study area on a year-round basis including Bighorn Sheep Canyon, Cactus Mountain, and the Royal Gorge (BLM 2017a). The study area is geographically located within bighorn sheep overall range and severe winter range, which support seasonal migration of bighorn sheep (Figure 3.6-4 and Figure 3.6-5, Appendix C). Herds in Colorado typically migrate between higher elevation summer ranges and lower elevation winter ranges. Severe winter range is defined as part of the winter range where 90 percent of the individual animals are located when the annual snowpack is at its maximum and/or temperatures are at a minimum in the two worst winters out of ten (BLM 2017a). CPW has been collecting GPS collaring data on 15 individual bighorn sheep in the study area for several years. The collaring data collected through the study supports CPW's Species Activity Map (SAM) data, which indicates that the local population tends to use habitat in the study area predominantly during winter and early spring (CPW 2019d). Bighorn sheep in the study area generally migrate to higher elevations along the Arkansas River or to the Royal Gorge in March and April.

Bighorns are adapted to a wide variety of habitats. Preferred habitat is provided in areas dominated by rock cover, grass, and shrubs with very steep rugged escape terrain in areas with good visibility (George et al. 2009). In general, bighorn sheep populations in Colorado are not evidently limited by availability of suitable habitat. Winter habitat is more likely to be limiting for bighorn sheep in Colorado. During winters, bighorns often are forced to concentrate on windswept ridges or move to lower elevations where human impacts on habitat are more prominent. CPW considers bighorn sheep susceptibility to domestic livestock diseases the primary factor limiting Rocky Mountain bighorn sheep populations in Colorado (George et al. 2009).

The mineral Sale Area is located within the bighorn sheep Arkansas River GMU S07 and DAU 09 (Figure 3.6-4, Appendix C). Two ram hunting licenses are issued per year in this game management unit, with hunter success being close to 100 percent in most years (CPW 2019c) Levels of hunting activity within the study area are unknown, but are likely to be minimal due to the limited public access and difficult terrain. Rams have been harvested several miles upriver, but none have been confirmed within the Sale Area (CPW 2019c).

Post-hunt population estimates over the past several years for GMU S07 show that the population has remained close to 80 individuals (CPW 2019c). No herd management plan has been completed for DAU 09; however, CPW's bighorn sheep management plans and goals include maintaining or increasing the size of existing herds and populations, with emphasis given to the

larger herd complexes (DAUs), or core populations, that represent groups of interconnected herds within a mountain range. Forays (long-distance periodic movements among populations) by bighorn sheep maintain connectivity between populations (or between herds).

Rocky Mountain bighorn sheep are a BLM Colorado-designated sensitive species (BLM 2015) and BLM management of Federal lands to maintain and enhance bighorn sheep habitat is guided by directives outlined in BLM Manual 6840 – Special Status Species (BLM 2008b).

3.6.1.3. Migratory Birds/Raptors

Nongame birds encompass a variety of passerine and raptor species including migratory bird species that are protected under the Migratory Bird Treaty Act (MBTA) (16 C. 703-711) and Executive Order 13186 (66 FR 3853). Migratory bird species protected by the MBTA are listed in 50 CFR 10.13, and the list of protected species is reviewed and updated regularly. Pursuant to Executive Order 13186, a Memorandum of Understanding (MOU) between the BLM and USFWS outlines a collaborative approach to promote the conservation of migratory bird populations. Additionally, bald and golden eagles are also protected under the Bald and Golden Eagle Protection Act (16 U.S.C.) 668 *et seq.*), which prohibits take and disturbance of individuals and nests. Any actions affecting bald and golden eagle may require development of an eagle conservation plan.

Pinyon-juniper woodlands support the largest number of nesting bird species found in any upland vegetation type in the West (Marcus et al. 2011). In addition to nesting birds, it is likely that birds such as passerines and raptors may migrate through the study area. Although limited in extent, wetland, grassland, and wooded areas throughout the study area may provide important stopover habitat for migrants or individuals during pre- and post-breeding movements.

The study area is located in the Southern Rockies/Colorado Plateau Bird Conservation Region (BCR 16) (Figure 3.6-7 Appendix C). An inventory of migratory and resident bird species potentially occurring within the mineral Sale Area was assembled from several sources including U.S. Fish and Wildlife Service Birds of Conservation Concern – 2008 List for BCR 16-Southern Rockies/Colorado Plateau. These species are associated with pinon-juniper and mountain shrub habitats, and are species that have declining populations and should be protected from habitat alterations. Table J.1 in Appendix J identifies the eight migratory bird species identified.

Raptor use of the study area is limited primarily to species associated with shrubland and pinon/juniper habitats in the foothills and lower mountain elevations. No raptors were observed during field surveys of the study area. Raptor species that potentially occur as residents or migrants within the study area include eagles (golden eagles), hawks (e.g., red-tailed hawk) falcons (e.g., prairie falcon, American kestrel), northern harrier, and turkey vulture (Cedar Creek 1997). Suitable nesting habitat is present on or near the study area for most of these species, but no nest sites or evidence of nesting activity of any raptor species were located during field surveys (ICF 2019). Cliff sites are numerous within the study area, but there was no evidence of

raptor nesting activity on any cliff face within the study area (ICF 2019). Mature cottonwoods exist outside the study area along Tallahassee Creek, and could provide suitable nest sites for red-tailed hawk, golden eagle, and great horned owl. Sensitive bird species are discussed further in Section 3.6.1.4, *Special Status Species.*

3.6.1.4. Special Status Species

Special status species are those species for which state or federal agencies afford an additional level of protection by law, regulation, or policy. Included in this category are federally listed species that are protected under the Endangered Species Act (ESA), and species designated as sensitive by the BLM. In addition, there is a Colorado State protected species list (Colorado Revised Statues, Title 33 Article 1-101) that the BLM has incorporated, in part, into its sensitive species list.

In accordance with the ESA, as amended, the lead agency (BLM) in coordination with the USFWS must ensure that any action that they authorize, fund, or carry out would not adversely affect a federally listed threatened or endangered species. In addition, as stated in Special Status Species Management Policy 6840 (6840 Policy) (Rel. 6-125), it also is BLM policy "to conserve and/or recover ESA-listed species and the ecosystems on which they depend so that ESA provisions are no longer needed for these species, and to initiate proactive conservation measures that reduce or eliminate threats to BLM sensitive species to minimize the likelihood of and need for listing of these species under the ESA."

Federally Listed Species

A species consultation list identifying federally listed species potentially occurring in the Sale Area was provided by USFWS through their *Information for Planning and Consultation* (IPaC) online tool. No identified critical habitat and no known occurrences of ESA plant or wildlife species have been observed or have the potential to occur in the study area (USFWS 2019b). In addition, no federal proposed or candidate species are likely to be present within the study area (Table J.2, Appendix J). However, the study area is located within the range of the Mexican spotted owl, a federally listed threatened species.

BLM Special Status Species

A total of 38 special status wildlife species were identified as potentially occurring within the study area (BLM 2019a). These species, their associated habitats, and their potential for occurrence within the study area are summarized in Table J.3. Occurrence potential for each species within the study area and CESA was evaluated for each species based on their habitat requirements and/or known distribution. Fifteen (15) special status wildlife species were identified as having potential to occur within the study area based on habitat requirements and known range distributions.

3.6.1.5. Aquatic Communities

Riparian habitat is minimal within the study area and is limited primarily to areas adjacent to Currant Creek. Some limited areas of riparian vegetation are also associated with isolated spring locations within the study area, and would be removed during mining. Riparian areas in the study area are dominated by plains cottonwoods (*Populus deltoides*), narrowleaf cottonwood (*Populus angustifolia*), thinleaf alder (*Alnus tenuifolia*), and peachleaf willow (*Salix amygdaloides*) (ICF 2019). Currant Creek is located outside the proposed surface disturbance area, therefore no direct effects to riparian communities along Currant Creek are anticipated. Due to insufficient water flow in ephemeral waterbodies within the study area, it is unlikely that wetlands or riparian habitats within the study area support fish species. These areas may support amphibian species. Impacts to aquatic species within the study area would be unlikely. Potential impacts to downstream aquatic communities from decreased water quality from storm water runoff would be mitigated by the use of BMPs to control turbidity, sediment, and nitrogen in runoff and by monitoring to ensure that runoff collected in sediment ponds meets applicable water quality standards prior to release to the surrounding drainages. A Stormwater Management Plan (SMP) and Spill Prevention, Control, and Countermeasures (SPCC) Plan also would be required for compliance under additional permitting authorities as described in Section 1.5, *Permits and Approvals*, therefore, impacts to downstream aquatic biological resources are not anticipated.

3.6.2. Environmental Effects

Terrestrial resource related issues were determined through consultation with CPW (CPW 2019g) and USFWS (USFWS 2019b). No direct or indirect effects to aquatic biological resources are anticipated. The primary issues related to terrestrial wildlife include loss or alteration of native habitats; increased habitat fragmentation; individual and population displacement; and direct mortality or injury of wildlife.

The potential effects of the proposed mineral sale on terrestrial wildlife resources can be classified as short-term (temporary) and long-term in duration. Short-term effects result from habitat disturbance and removal due to construction and from activities associated with quarry operation and occur during the active life of the quarry and until *reclamation* is successfully completed. Short term effects would cease upon quarry closure and completion of successful reclamation. Long-term effects include permanent changes to habitats and the wildlife and aquatic populations that depend on those habitats, regardless of reclamation success.

3.6.2.1. Direct and Indirect Effects from Alternative A

Issue 1: How would the proposed Parkdale Quarry expansion affect the availability and quality of habitat for bighorn sheep and other big game species?

Under Alternative A, mining would be performed in five phases progressing from west and northwest to southeast (Figure 2.2-2, Appendix C). Habitat losses associated with Alternative A

include a total disturbance of 674 acres of bighorn sheep severe winter range and 705 acres of mule deer severe winter range over the life of the quarry (approximately 100 years). Habitat losses would occur in phases, as each phase of mining is implemented, and would be sustained over an approximately 20 to 30-year period as bare bedrock would remain until a mining pit is no longer needed and reclamation is initiated (Table 3.17**)**. Disturbance associated with Alternative A would be reclaimed, as presented in Section 2.3.7. Proposed reclamation activities would aim to replace pinyon-jumpier habitat with plant communities that provide greater winter forage for bighorn sheep and mule deer.

Bighorn sheep and mule deer would avoid a much larger footprint during implementation of Alternative A. Noise and human presence associated with rock and gravel extraction would likely result in additional habitat losses due to displacement of big game species away from operation activities. All processing activities would continue to occur at the existing Parkdale Quarry, so no additional disturbance is anticipated in association with processing facilities.

Project related fencing installed around active mining and reclamation areas would exclude big game species from accessing areas of suitable habitat immediately adjacent to mine operations, although big game are likely to avoid these areas due to human presence and noise. All fencing located within the proposed Sale Area would be wildlife friendly and consist of three-strand fencing with smooth wire and steel posts. Big game could be adversely affected by colliding with or becoming entangled in project fencing, although individuals are anticipated to avoid fenced areas where mining operations are occurring.

Big game may experience higher levels of mortality due to the construction of a new haul road under Alternative A and associated increased vehicular traffic during construction, expansion, and development. Vehicular traffic collisions may injure or kill individual big game species, and local populations may experience higher levels of mortality due to increased number of roads and use of existing roads in the immediate vicinity of the study area.

Adverse effects to the local mule deer and bighorn sheep populations would be expected to be relatively minor since habitat disturbance would occur in phases, suitable habitat is available in the areas surrounding the study area, and no parturition (lambing) areas would be affected. As described in Section 2.3.7, and the Reclamation Plan in Appendix D, Martin Marietta would use a concurrent reclamation technique to minimize the amount of habitat disturbance during active mining. Habitat losses resulting from displacement may be minimized over time as mule deer and bighorn sheep become acclimated to increased operational activities. Mule deer and bighorn sheep have demonstrated the ability to adapt to mining operations as long as they do not associate harassment or hunting with the activity (Jansen et al 2007; MacCallum 1988; MacCallum 1991).

Table 3.17. Disturbance to Bighorn Sheep and Mule Deer Severe Winter Range Associated with Alternative A

Mineral Sale Area	Total Bighorn Sheep Range Disturbance (acres)	Total Mule Deer Range Disturbance (acres)
Phase 1 – West Pit	81	81
Phase 2 – West Central Pit	168	168
Phase 3 – Central Pit	206	237
Phase 4 – East Central Pit	112	112
Phase 5 – East Pit	107	107
Total	**674**	**705**

Mitigation Measure TW-01: Seasonal Timing Limitations

The Alternative A is proposed in bighorn sheep and mule deer severe winter range. The 1996 Royal Gorge Resource Area Resource Management Plan states that within the Arkansas River Ecoregion, big game critical winter habitat within the Sale Area would be seasonally limited to mineral operations from December 1 to April 30. Colorado Parks and Wildlife's statewide recommended stipulations for land use were updated in December 2019 and include seasonal restriction dates for bighorn sheep winter range from November 1 to April 30 and for mule deer winter range from December 1 to April 30. Alternative A does not serve the purpose of improving the site for wintering big game; therefore, a timing limitation from November 1 to April 30 would be enacted to eliminate disturbance to bighorn sheep and mule deer during this critical period to avoid an adverse impact. This measure would be applied to the initial year of mine expansion activity only, as bighorn sheep are anticipated to acclimate to disturbance during subsequent years of active mining, as interpreted by CPW in consultation with the BLM biologist.

The seasonal timing limitation would also be implemented for mine areas where reclamation groundwork (slopes and revegetation) has been completed. Human encroachment, including overflights, would also be minimized to the maximum extent possible from November to April to encourage winter use by bighorn sheep and other big game in reclaimed habitat.

Effectiveness:

Implementation of this measure would avoid and minimize adverse effects to bighorn sheep during periods of severe winter conditions when snow depths restrict access to forage and other habitat components. Limitation of mining activity during this period would result in a reduction of potential disturbance and displacement of bighorn sheep during this sensitive period.

Issue 2: How would the proposed Parkdale Quarry expansion affect the availability and quality of habitat and nesting sites for migratory bird species?

As described in Section 3.6.1.3, a variety of migratory bird species (e.g., raptors and songbirds) have been identified as potentially occurring within the study area. Potential direct effects to bird

species would include the short-term reduction of 705 acres of potentially suitable breeding, roosting, and foraging habitat, including 370 acres of pinyon-juniper habitat, and 334 acres of shrub/scrub habitat. Raptor mortalities could increase under Alternative A due to vehicular collisions similar to big game species. Alternative A would result in decreased quality of habitat for raptor prey species due to changes in vegetation community composition and/or an increase in invasive species during mine development, which would result in reduced prey availability.

Effects to other migratory bird species would be similar to those described for raptors, excluding the effects on prey availability and predation, which are not applicable to other birds that do not prey on small mammals. Overall effects to migratory birds and raptors are expected to have minimal effect on local bird populations based on the amount of suitable breeding and foraging habitat in the area surrounding the study area, which would not be affected by Alternative A.

Mitigation Measure TW-02: Migratory Bird Timing Restriction

Pursuant to BLM Instruction Memorandum 2008-050, to reduce impacts to Birds of Conservation Concern, no habitat disturbance (removal of vegetation such as timber, brush, or grass) is allowed during the periods of May 15 to July 15, the breeding and brood rearing season for most Colorado migratory birds. The provision would not apply to completion activities in disturbed areas that were initiated prior to May 15 and continue into the 60-day period. An exception to this timing limitation would be granted if nesting surveys conducted no more than one week prior to vegetation-disturbing activities indicate no nesting within 30 meters (100 feet) of the area to be disturbed. Surveys shall be conducted by a qualified breeding bird surveyor between sunrise and 10:00 a.m. under favorable conditions.

Mitigation Measure TW-03: Pre-construction Raptor Surveys

Additionally, Martin Marietta would have a qualified biologist conduct raptor nest surveys prior to any new significant surface disturbance activities within suitable habitat. If active nests are located, Martin Marietta would coordinate with the BLM to establish appropriate nest activity buffers in adherence with CPW's recommended raptor buffer distances. Any activity that could disturb the nesting raptors would be avoided in the established activity buffer until the nest is no longer in-use, or as directed by the BLM. Surface-disturbing activities would commence once the nest fledges. The definition of "active nest" varies by species, based upon life history traits and other specific circumstances involved. For the proposed sale area, which is in a pinyon woodland landscape, raptors in this landscape typically do not exhibit high site fidelity to a specific nest site. Therefore, an active nest is defined as "actively being used for brood rearing in the moment" in this situation.

Issue 3: How would the proposed Parkdale Quarry expansion affect the availability and quality of habitat for special status wildlife species?

Special status species are identified in Table J.3 (Appendix J). Effects to special status wildlife species would be similar to those described above for big game and migratory bird species. Direct

effects to special status species would include the short-term reduction of 370 acres of pinyon-juniper habitat, and 334 acres of shrub/scrub habitat. Effects would include displacement from the disturbed areas and increased habitat fragmentation until vegetation is re-established. In most instances, suitable habitat adjacent to disturbed areas would be available for use by these species; however, displacement would increase competition and could result in some local reductions in special status wildlife populations if adjacent habitats have a higher density of species.

Direct mortality and injury due to vehicle collisions would be similar for special status species as for other wildlife species. Indirect effects on special status mammal species would also be similar to those described for big game, with the exception of effects to seasonal habitats and migratory corridors, which are not delineated for special status species in the study area. Habitat fragmentation would have a greater impact on special status species where roads and other disturbed areas lacking vegetation would present a barrier to movement due to lack of cover and vulnerability to predation. Potential effects to special status species from quarry development are expected to be low, due to the low probability of their occurrence in the proposed Sale Area.

Bats

Two bat species (Townsend's big-eared bat and fringed myotis) have the potential to occur in the Sale Area. Implementation of Alternative A could result in direct and indirect impacts to these local bat species and their habitat, especially when disturbance occurs in riparian, shrubland, woodland, grassland and meadow foraging habitats. Direct impacts would include loss of foraging, nursery, and hibernacula habitat during the life of the quarry, and mortalities due to vehicular traffic collisions.

Indirect impacts associated with Alternative A include increased noise related to mining activities, human presence and artificial lighting used for nighttime operations in the existing processing area only. Some bat species, like Townsend's big-eared bats, are especially susceptible to disturbance, and may abandon nursery and hibernaculum, leading to increased mortality (CNHP 2013). Arousal in winter could deplete vital energy stores and prevent arousal in spring. Project-related noise from construction, vehicle traffic, and increased human activity could adversely affect these species. The use of artificial lighting during night-time operations could adversely impact foraging bats.

Potential roost sites for these bat species include crevices on cliff faces, mines, caves, trees, and buildings. Existing crevices on cliff faces, rock outcrops and small cavities are numerous in the Sale Area and may provide roosting habitat, and would be impacted under Alternative A. The increase disturbance and noise near these roosting habitats may also cause displacement of aversion to use of the habitats. Overall population-level effects to sensitive bat species are expected to be minimal based on the amount of suitable roosting and foraging habitat in the area surrounding the study area, which would not be affected by Alternative A.

Protective/Mitigation Measures

None are identified.

Birds

Golden Eagle

Although no golden eagles or nest sites were identified within the study area during baseline surveys, individuals could occur while opportunistically foraging for roadkill or passing through the study area. Direct impacts would include the short-term reduction of 705 acres of potential foraging and breeding habitat and direct mortality due to vehicular collisions. Indirect impacts are associated with increased mine-related noise and human presence that would increase under Alternative A.

Additional indirect impacts to golden eagles would be similar to those discussed for migratory birds above. Potential impacts to this species as a result of Alternative A are considered low due to the lack of active nest sites or individuals within the study area, and low potential for impacts to the prey base in the study area.

Burrowing Owl

Although no burrowing owl nest locations or preferred foraging areas containing prairie dog colonies were observed during baseline studies, this species may occur within the study area. Direct impacts to western burrowing owl would include short-term reduction of 705 acres of potential breeding and foraging habitat. In addition, burrowing owls could be particularly affected by roads development, as this species only nests in burrows on the ground; consequently, roads could result in destruction of burrowing habitat, and burrowing owls may be more susceptible to collisions with vehicles.

Indirect impacts associated with mine-related noise and human presence currently occur at the site and would increase under Alternative A. Burrowing owls maybe also be indirectly affected by any adverse impacts on prairie dog towns because burrowing owls often use abandoned prairie dog burrows as nest sites. However, reclamation of disturbed areas, which would provide more open ground and herbaceous cover preferred by prairie dogs, could result in expansion of prairie dog burrows and subsequently increase the abundance of nesting sites for burrowing owls. Burrowing owls also prefer open ground for hunting and for nesting sites. Increased prairie dogs in the Project Area would also increase prey abundance for larger raptor species such as golden eagles, bald eagles, and ferruginous hawks. Potential impacts to this species as a result of the Alternative A are considered low due the overall availability of suitable habitat in the study area, and the lack of nesting owls or individuals observed during surveys.

Ferruginous Hawk

Although no ferruginous hawk nests were identified within the Sale Area and this species was not observed during surveys, individuals could occur while foraging or passing through the Sale Area. Direct impacts would include the short-term reduction of 370 acres of pinyon-juniper and 334 acres of shrub/scrub foraging habitat until final reclamation is completed and vegetation re-established and a long-term reduction of 194 acres. Indirect impacts associated with Alternative A include increased mine-related noise and human presence.

Additional indirect impacts to ferruginous hawks associated with Alternative A would be similar to those discussed for migratory birds above. Potential impacts to this species as a result of the proposed mineral sale are considered low due to the lack of active nest sites within the study area, the current level of activity at the mine site, and low potential for impacts to the prey base in the study area.

These direct adverse impacts to sensitive raptors and migratory bird species associated with the construction and operation of the proposed project would be minimized due to the implementation of Operator Committed Environmental Protection Measures presented in Table 2.2.

Protective/Mitigation Measures

See Mitigation Measures TW-02 and TW-03 above.

Amphibians

Plain's Leopard Frog

Plain's leopard frog has not been documented within the study area, but suitable habitat exists. Implementation of Alternative A could result in direct and indirect impacts to the Plain's leopard frogs and their habitat, especially when disturbance occurs in wetland and riparian habitats. Direct impacts would include loss of foraging, breeding, and over-wintering habitat during the life of the quarry, and mortalities due to vehicular traffic collisions.

Indirect effects resulting from implementation of Alternative A include increased habitat fragmentation where roads and other disturbed areas lacking vegetation would present a barrier to movement due to lack of cover and vulnerability to predation and increased erosion and sedimentation due to surface disturbance. Potential effects to the Plain's leopard frog from quarry development are expected to be low, due to the low probability of their occurrence in the proposed Sale Area, and the lack of suitable aquatic features.

Protective/Mitigation Measures

None are identified.

Plants

There are six sensitive plant species (Rydberg's golden columbine, Brandegee's buckwheat, gold blazingstar, Royal Gorge blazingstar, rock-loving noeparrva, and Degener's beardstonque) that have the potential to occur in the study area based on the availability of suitable habitat. Most of these species prefer open areas in pinyon-juniper and shrubland communities, or barren soils on rock outcrops or hillsides. Under Alternative A, the majority of surface disturbance would occur in shrubland and pinyon juniper habitat, and in upland areas that were previously undisturbed. Impacts to BLM sensitive plant species could include direct mortality as a result of surface disturbance, habitat fragmentation associated with habitat loss, and the partial or complete destruction of an individual plant or cluster of plants' seed banks where surface-disturbing activities occur. Indirect impacts include a change in vegetation composition and diversity, expansion of invasive species and noxious weeds, and potential for increased soil erosion. Soil erosion could result in less soil to support special status plant communities.

Reclamation activities would aim to revegetate the study area predominantly with grassland species, resulting in a loss of shrubland vegetation communities with which most of these plant species are associated. This could result in long term habitat loss from the conversion of pinyon juniper and shrub-dominated cover types to predominantly grass and forb cover types. Activities associated with Alternative A could have a direct adverse impact on special status plant species populations if mining activities could not avoid established plant communities. Proposed mitigation measures could reduce potential impacts on special status plant species.

Mitigation Measure TW-04: Pre-construction Special Status Plant Species Surveys

Pre-construction surveys would be conducted within the proposed area of disturbance for all special status plant species that have potential habitat, as determined by the BLM, in the Sale Area. While the BLM may direct the operator to avoid areas containing special status plant species populations, lease stipulations in the Sale Area do not prohibit development (i.e., No Surface Occupancy [NSO] stipulation) that could have a direct physical impact on these populations.

Interim and final reclamation should aim to restore areas of potential habitat for sensitive plant species identified during pre-construction surveys.

3.6.2.2. Direct and Indirect Effects from Alternative B

Under Alternative B, the proposed mineral Sale Area would not be developed, and direct and indirect effects to wildlife resources would not occur beyond those effects resulting from previously authorized disturbance. Under this alternative, 705 acres of potential wildlife habitat would not be disturbed or lost, as described under Alternative A. Additional habitat fragmentation and animal displacement would not occur, limiting the effects to wildlife resources to existing conditions.

3.6.2.3. Direct and Indirect Effects from Alternative C

In response to stakeholder concerns regarding potential impacts under Alternative A to bighorn sheep and their habitat located within the proposed Arkansas River Canyonlands ACEC to the west of the Sale Area, Martin Marietta provided an Alternative Materials Sale Area (Alternative C) boundary to the BLM for evaluation (Martin Marietta 2019a). Alternative C would include approximately 633 acres of surface disturbance, and potential effects to game, migratory birds, and special status species under Alternative C would be similar in extent to Alternative A, but would include approximately 65 fewer acres of surface disturbance and would be shifted to the east approximately one half-mile away from the ACEC.

Protective/Mitigation Measures

None are identified.

Residual Effects

Assuming successful reclamation of all project components, residual impacts to wildlife habitat would include the temporary loss of approximately 698 acres and 633 acres of wildlife habitat under Alternative A and Alternative C, respectively. This loss off wildlife habitat would be incremental over the 100-year life of mine and would persist until final reclamation is complete and successful.

3.6.3. Cumulative Effects Analysis

The CESA for special status species encompasses the Tallahassee Creek-Currant Creek watershed and Royal Gorge-Arkansas River watershed (Hydrologic Unit Code, HUC 10: 1102000111), the CESA for migratory birds is the Arkansas Headwaters Sub-basin (HUC 8: 11020001) (Figure 3.6-7, Appendix C), the CESA for bighorn sheep comprises the Arkansas Valley DAU S09 (GMUs S47, S68, S07, S49, and S79) and the Shelf Road DAU (GMU S60) (Figure 3.6-6, Appendix C) and the CESA for mule deer comprises the Cripple Creek DAU D-16 (GMUs 49, 57, 58, and 581) and the Wet Mountain DAU D-34 (GMUs 86, 69, 84, 861, 691) (Figure 3.6-2, Appendix C). The CESAs include contiguous areas that provide important seasonal habitat for general wildlife species.

The past, present, and RFFAs are discussed in Section 3.2.1, *Past and Present Actions*, and Section 3.2.2, *Reasonably Foreseeable Future Actions.*

Past, present, and RFFAs in the wildlife CESAs have resulted, or would result in the direct disturbance of habitat primarily related to urbanization and population growth infill, roads and highways, mineral development, transmission lines, and grazing and agriculture activities. Development of reasonably foreseeable mining and infrastructure projects needed for urban development is anticipated across the CESAs, especially in and around existing population centers such as Salida, Cañon City, Brookside, and Florence. Wildfire has also impacted wildlife habitat near the Sale Area. In the last two decades wildfires have burned approximately

8,000 acres. The regional area is an arid climate and if the current trend in climate change continues wildfire frequency may increase and have an increasing impact on wildlife habitat.

3.6.3.1. Alternative A

Cumulative effects to wildlife resources would be predominantly related to habitat loss, habitat fragmentation and wildlife displacement associated with Alternative A as described in Section 3.6.2, *Environmental Effects*. These effects would be present throughout the life of the mine until final reclamation is complete. Other direct effects to big game species include mortalities or injury resulting from vehicle collisions as well as indirect effects such as avoidance, restriction of movement (due to new facilities or roads), displacement of animals from the RFFAs during all seasons, and increased potential for poaching/hunting.

The type and nature of cumulative effects to migratory bird species would be primarily related to the direct and indirect effects of Alternative A described in Section 3.6.2, *Environmental Effects*, and would include direct mortality through vehicular traffic collisions due to increased access and activity in the area. Indirect effects include habitat loss, degradation, and habitat fragmentation, as well as disturbance and displacement from areas with human activities.

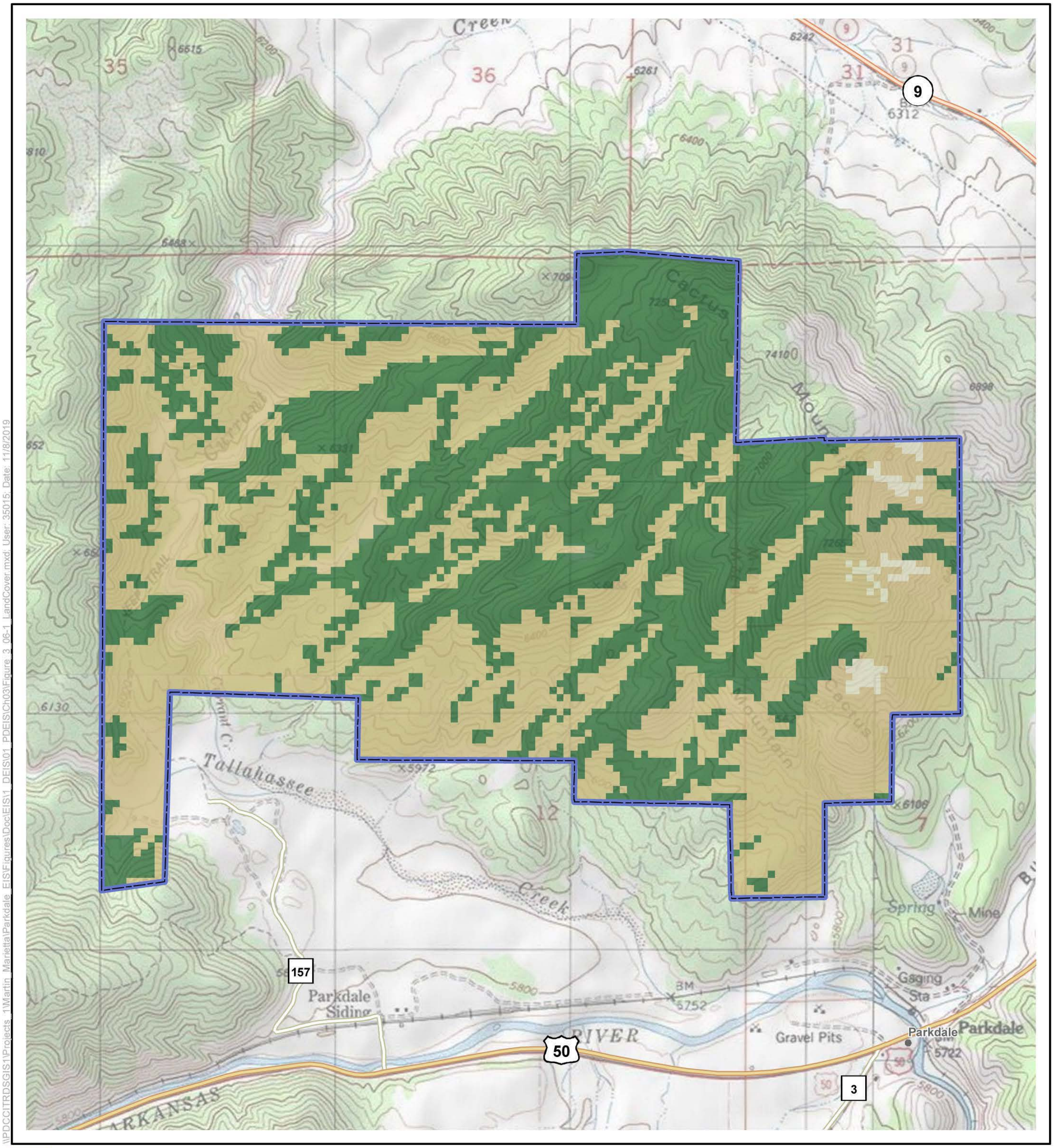
Potential cumulative effects to special-status species also would be similar to those described in Section 3.6.2, *Environmental Effects*, and primarily related to Alternative A. Special status species including small mammals, migratory birds, reptiles, and amphibians that occur in the CESA would continue to occupy their respective ranges and breed successfully; however, population numbers may decrease relative to the amount of cumulative habitat loss and disturbance from incremental development. Effects would most likely occur where the RFFAs and Alternative A overland the special status species CESA.

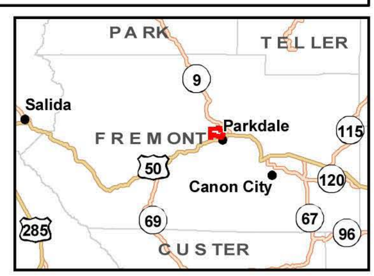
3.6.3.2. Alternative B

Cumulative effects resulting from past, present, and RFFAs to wildlife resources for Alternative B would generally be the same as those described for Alternative A. However, there would be 705 acres less of surface disturbance and associated habitat fragmentation within the CESA under Alternative B. Effects to the existing bighorn sheep and mule deer severe winter ranges, migratory birds, and special status species would be limited to those resulting from previously authorized actions for the existing Parkdale Quarry.

3.6.3.3. Alternative C

Cumulative effects resulting from past, present, and RFFAs to wildlife resources for Alternative C would generally be the same as those described for Alternative A. However, there would be 65 acres less of surface disturbance and associated habitat fragmentation within the CESA under Alternative C. These effects would be present throughout the life of the mine until final reclamation is complete.





Landcover Study Area

Land Cover Class

- Evergreen Forest
- Herbaceuous
- Shrub/Scrub

Source: NLCD 2016.

N

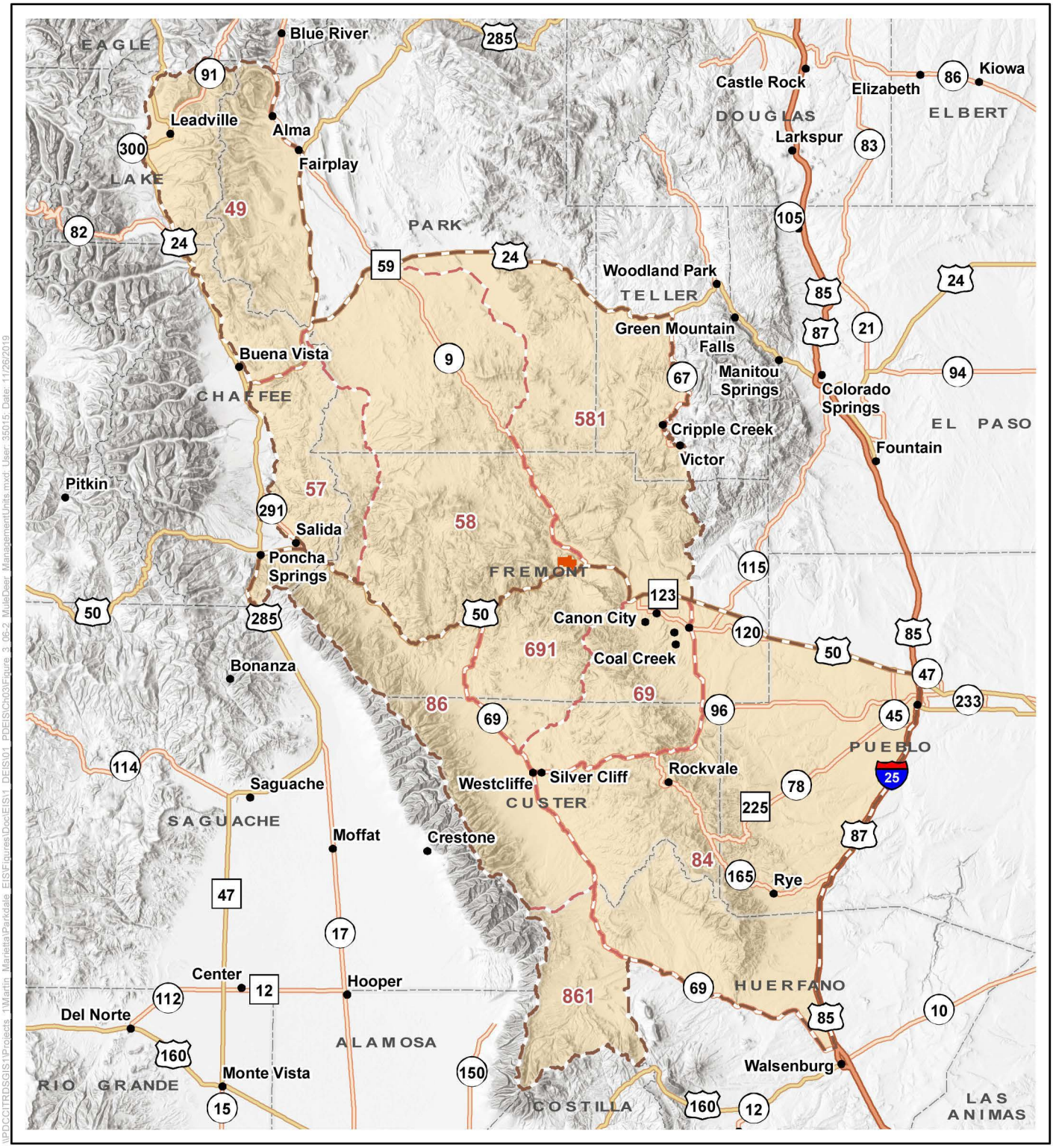
0 0.25 0.5 Miles

1:24,000

ICF

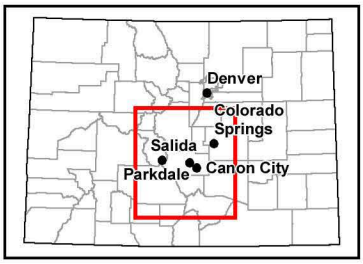
Figure 3.6-1
Landcover in the Study Area

\\PDCCITRDSGIS1\Projects_1\Martin_Marietta\Parkdale_EIS\Figures\Doc\EIS\1_DEIS\01_PDEIS\Ch03\Figure_3_06-1_LandCover.mxd; User: 35015; Date: 11/8/2019



Study Area
Cumulative Effects Study Area
Data Analysis Unit
Game Management Unit

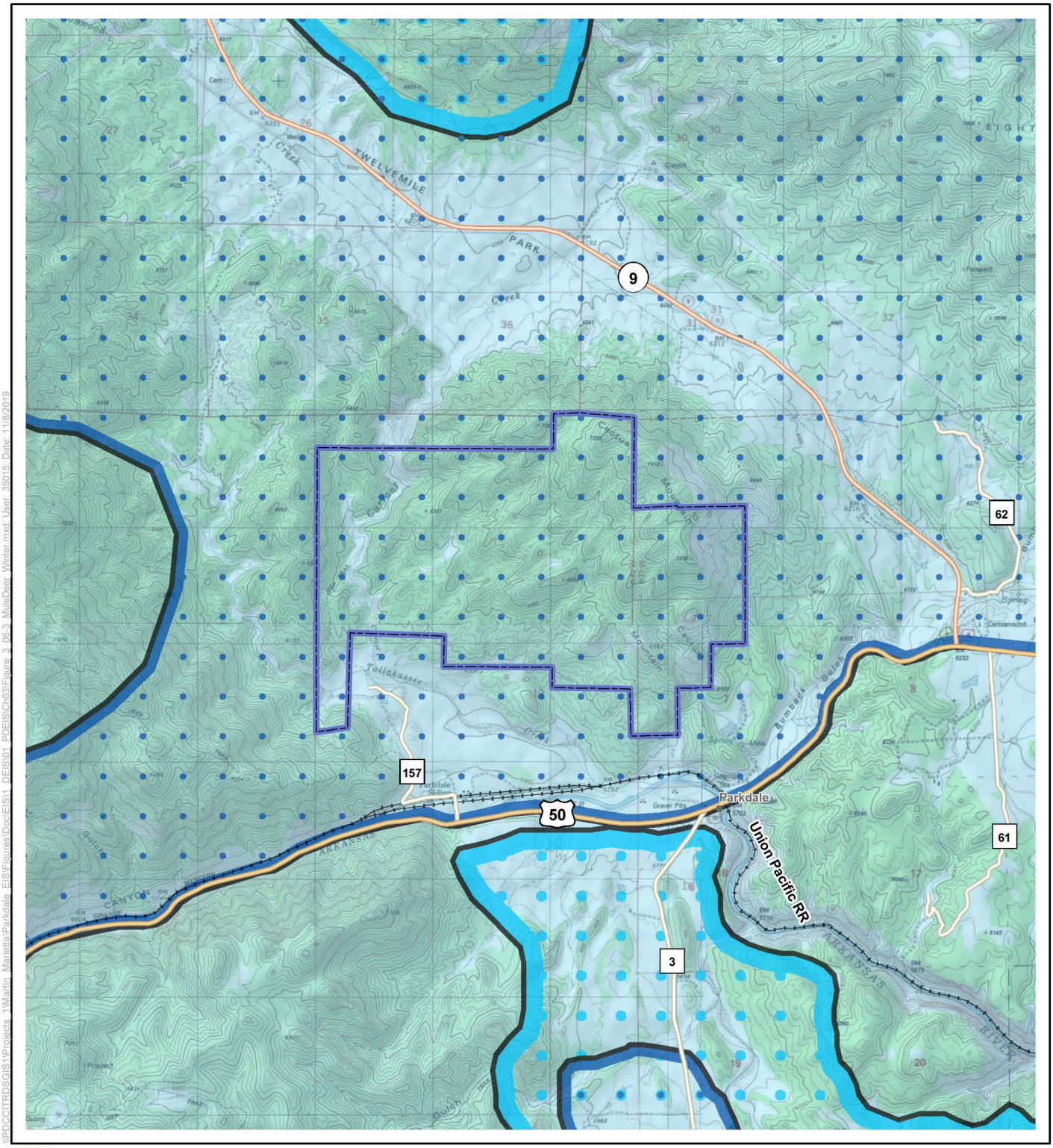
City or Town
Interstate Hwy
U.S. Hwy
State Hwy
County Road



Source: CPW 2018

0 5 10 Miles
1:1,100,000

Figure 3.6-2
Mule Deer Cumulative Effects Study Area



Source: CPW 2018.

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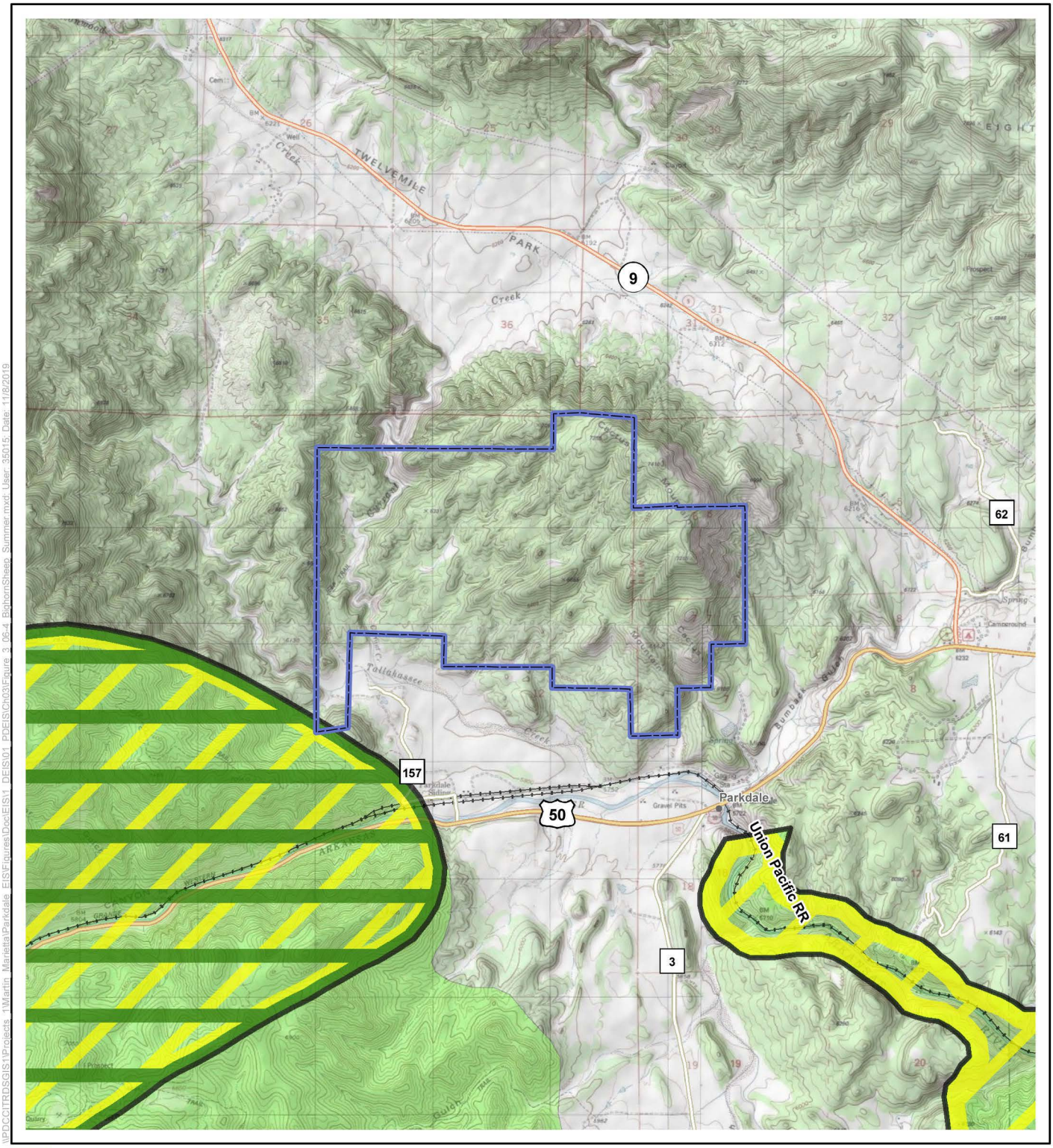
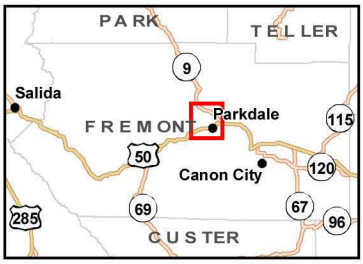
1:48,000

Figure 3.6-3
Mule Deer Winter Ranges in the Study Area



Study Area
Summer Concentration Area
Production Area
Summer Range



Source: CPW 2018.

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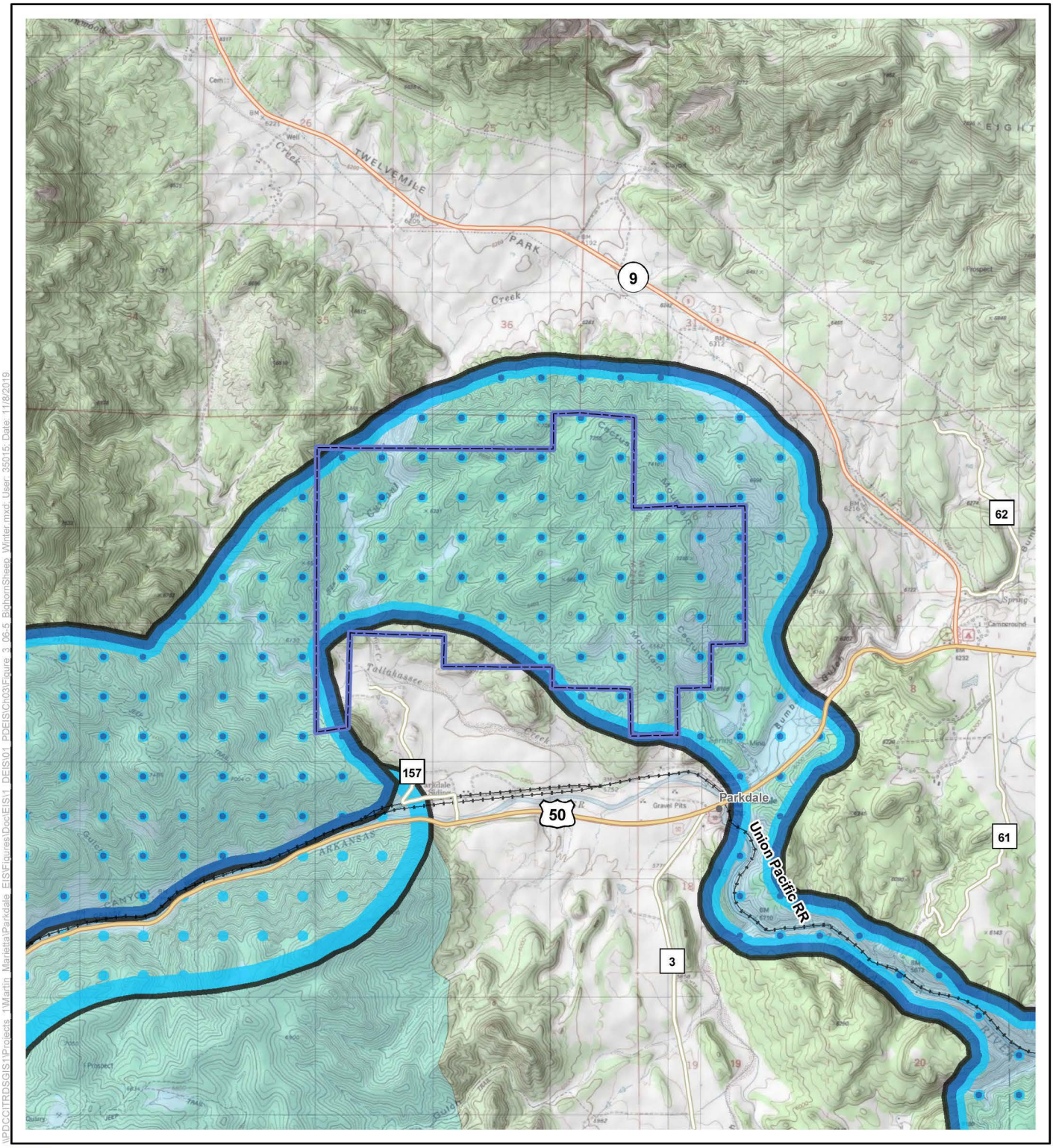
1:48,000

Figure 3.6-4
Bighorn Sheep Summer Ranges in the Study Area



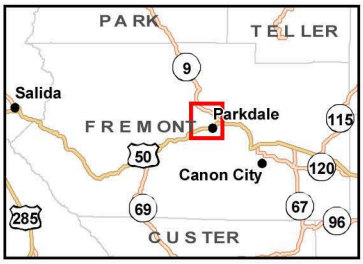
Study Area

Bighorn Sheep Range

Severe Winter Range

Winter Concentration Area

Winter Range



Source: CPW 2018.

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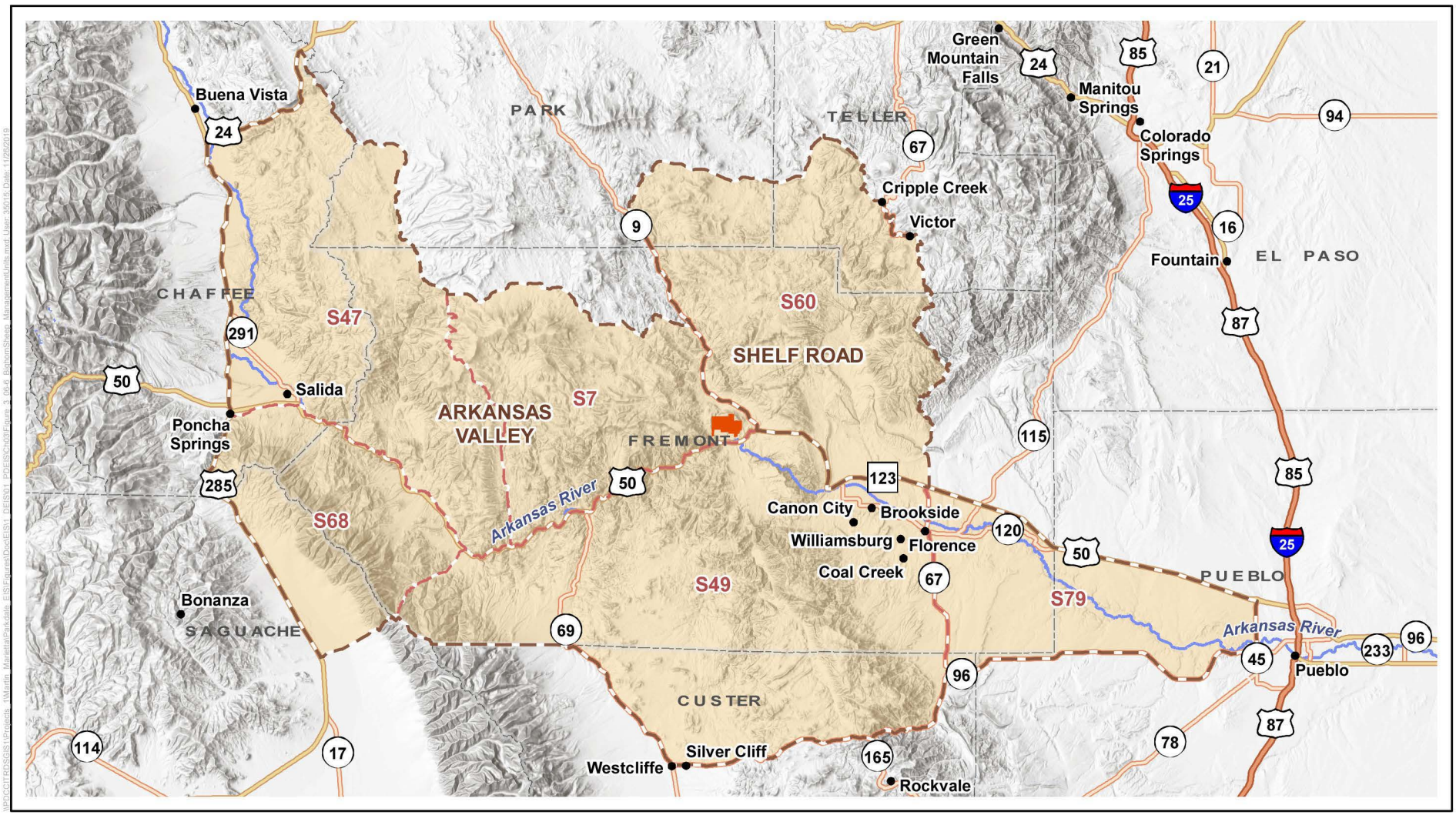
1:48,000

Figure 3.6-5
Bighorn Sheep Winter Ranges in the Study Area



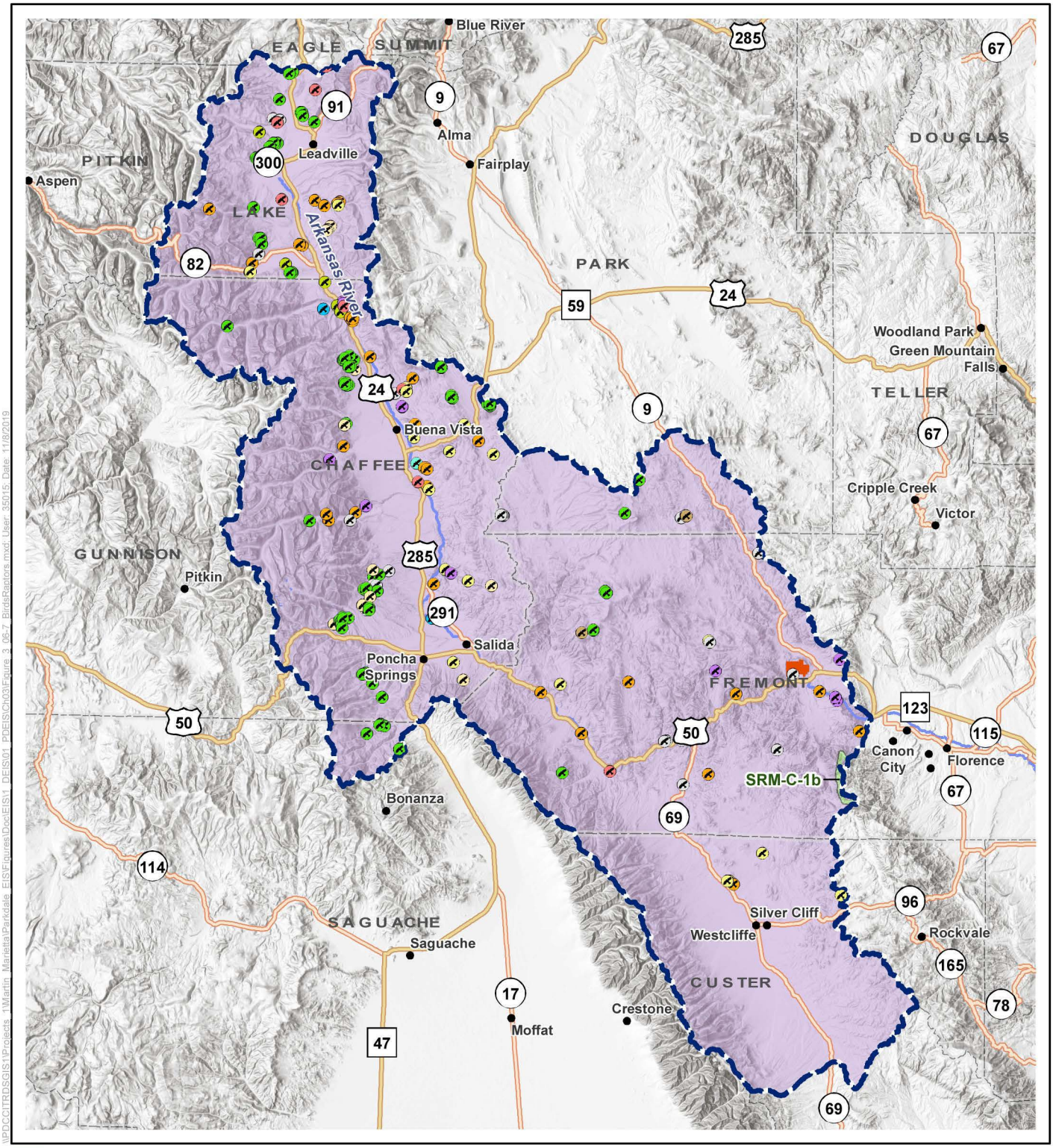
Study Area
Cumulative Effects Study Area
BighornSheep Management Units
Data Analysis Unit
Game Management Unit

City or Town
Interstate Hwy
U.S. Hwy
State Hwy
County Road

Source: BLM 2018

0 5 10 Miles
1:700,000

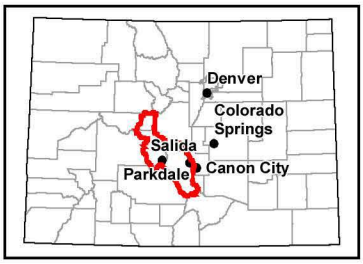
Figure 3.6-6
Bighorn Sheep Cumulative Effects Study Area



Study Area
Arkansas Headwaters Sub-basin
Mexican Spotted Owl Critical Habitat
Southern Rockies/Colorado Plateau Bird Conservation Region

Raptor Nests

- Bald Eagle
- Cooper's Hawk
- Golden Eagle
- Long-eared Owl
- Northern Goshawk
- Osprey
- Peregrine Falcon
- Prairie Falcon
- Red-tailed Hawk
- Swianson's Hawk
- Unknown Raptor



Source: NABCI 2015, USFWS 2019, BLM 2019.

ICF

N

0 5 10 Miles
1:900,000

Figure 3.6-7
Migratory Birds/Raptors
Cumulative Effects Study Area

Final Environmental Impact Statement
Parkdale Quarry Expansion Project

Appendix J

Wildlife and Special Status Species

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APPENDIX J. WILDLIFE AND SPECIAL STATUS SPECIES TABLES

Table J.1. Migratory Birds of Conservation Concern Potentially Occurring in the Study Area

Species Common Name (Scientific Name)	Life History/Habitat
Piñon jays *(Gymnorhinus cyanocephalus)*	Range the semiarid lands of the West. Piñon jays are pinyon-juniper obligates in Colorado and nest commonly at the lower elevations of pinyon-juniper woodlands, often where junipers dominate. They prefer extensive stands far from high human activity.
Rufous Hummingbird *(selasphorus rufus)*	Habitat includes forest edges, stream sides, mountain meadows. Breeding habitat includes forest edges and clearings, and brushy second growth within the region of northern coast and mountains. Winters mostly in pine-oak woods in Mexico. Migrants occur at all elevations but more commonly in lowlands during spring, in mountain meadows during late summer and fall.
Golden eagle *(Aquila chrysaetos)*	Bird of grasslands, shrublands, pinyon-juniper woodlands, and ponderosa pine forests, but may occur in most other habitats occasionally, especially in winter. Nests are placed on cliffs and sometimes in trees in rugged areas, and breeding birds range widely over surrounding habitats.
Peregrine Falcon *(Falco peregrinus)*	In Colorado breed on cliffs and rock outcrops from 4,500-9,000 ft. in elevation. They most commonly choose cliffs located within pinyon-juniper and ponderosa pine zones. These falcons feed on smaller birds almost exclusively, with White-throated swifts and rock doves being among their favored prey.
Prairie falcons *(Falco mexicanus)*	Nest in scattered locations throughout the state where they inhabit the grassland and cliff/rock habitat types. These falcons breed on cliffs and rock outcrops, and their diet during the breeding season is a mix of passerines and small mammals.
Gray Vireos *(Vireo vicinior)*	Are a pinyon-juniper woodland obligate. Gray Vireos usually inhabit stands dominated by juniper or thin stands of pure juniper. They construct nests of dry grasses, plant fibers, stems, and hair, often camouflaging them with sagebrush leaves.
Black-throated gray warblers *(Setophaga nigrescens)*	Fairly common summer residents in pinyon-juniper woodlands across the southwestern half of Colorado. Some surveys show these warblers to be the most frequently encountered birds in the piñon-juniper woodland. Black-throated gray warblers, in Colorado, are pinyon-juniper obligates, preferring tall, dense piñon-juniper woodlands. Virginia's warblers in Colorado nest between 5,000-9,000 ft. in elevation. They breed most abundantly in the western quarter of the state, along the eastern slope foothills, and in the upper Arkansas River drainage.
Virginia's warblers *(Leiothlypis virginiae)*	Virginia's warblers nest in dense shrublands and on slopes of mesas, foothills, open ravines, and mountain valleys in semiarid country. They use scrubby brush, pinyon-juniper woodland with a well-developed shrubby understory, ravines covered with scrub oak and dense shrublands, especially Gambel oak. They also breed in open ponderosa pine savannahs that have a dense understory of tall shrubs.

Sources: USFWS 2019; BLM 2017

Table J.2. Federally Listed Species Potentially Occurring in the Study Area

Common Name (Scientific Name)	Listing Status	Associated Habitat Types	Potential to Occur (Yes/No)	Notes
Mammals				
Canada Lynx *(Lynx Canadensis)*	FT	Boreal forests with large woody debris.	No	No habitat present within study area.
North American Wolverine *(Gulo gulo luscus)*	PFT	Boreal forests, tundra, and montane conifer forests.	No	No habitat present within study area.
Birds				
Mexican Spotted Owl *(Strix occidentalis lucida)*	FT	Steep Canyons with old growth forest in mixed conifer, pine-oak woodlands.	No	No habitat present within study area. Study area is located within species range.

Source: USFWS 2019

FT = Federally Threatened; PFT = Proposed Federally Threatened

Table J.3. BLM Sensitive Wildlife and Plant Species Potentially Occurring in the Study Area

Common Name (Scientific Name)	Management Status	Associated Habitat Types	Potential to Occur (Yes/No)	Notes
Mammals				
Townsend's big-eared bat *(Corynorhinus townsendii pallescens)*	BLM, SC	The species breeds and forages in a variety of habitats, including lowland riparian, desert shrub, forest, grassland, and towns, from 1,770 to 6,980 ft. in elevation and roosts primarily in mines, caves, and structures in woodlands.	Yes	Potential habitat present within study area.
Gunnison's prairie dog *(Cynomys gunnisoni)*	BLM	Grasslands, semi-desert, and montane shrublands.	No	No habitat present within study area.
Black-tailed prairie dog *(Cynomys ludovicianus)*	BLM, SC	Grasslands.	No	No habitat present within study area.
Fringed myotis *(Myotis thysanodes)*	BLM	The species breeds and forages in a wide variety of habitats, including lowland riparian, grassland, desert shrub, pinyon-juniper forests, and meadows, between 1,380 and 7,080 ft. in elevation. It roosts in rock crevices, mines, caves, trees, and buildings.	Yes	Potential habitat present within study area.

Common Name (Scientific Name)	Management Status	Associated Habitat Types	Potential to Occur (Yes/No)	Notes
Rocky mountain bighorn sheep *(Ovis canadensis)*	BLM	The species inhabits steep, high mountain terrain. Summer habitat is primarily alpine tundra. Winter habitat is lower elevation open, grass areas and slopes, with low shrubs.	Yes	Potential habitat present within study area.
Swift fox *(Vulpes velox)*	BLM, SC	The species inhabits short grass and mixed-grass prairies. It is closely associated with prairie dog colonies.	No	No habitat present within study area.
Birds				
Northern goshawk *(Accipter gentilis)*	BLM	Mixed coniferous forest and mature aspen stands with tall trees, intermediate canopy coverage for nesting, and small open areas for foraging.	No	No habitat present within study area.
Golden eagle *(Aquila chrysaetos)*	BLM	The species breeds and forages in a variety of habitats, including large expanses of grasslands, sagebrush, agricultural lands, and tundra. It constructs a large stick nest on cliffs and in large trees and exhibits high nest fidelity.	Yes	Potential habitat present within study area.
Burrowing owl *(Athene cunicularia)*	BLM, ST	The species breeds and forages in a wide variety of arid and semiarid environments, including grassland, desert, and shrub-steppe habitats, and agricultural areas. It generally nests in burrows excavated by small mammals, particularly prairie dogs and ground squirrels.	Yes	Potential habitat present within study area.
Ferruginous hawk *(Buteo regalis)*	BLM, SC	The species breeds in semiarid open country, primarily grasslands, basin prairie shrublands, and badlands, typically near prairie dog colonies. It requires large tracts of relatively undisturbed rangeland for foraging habitat.	Yes	Potential habitat present within study area.
Western snowy plover *(Charadrius alexandrinus nivosus)*	BLM, SC	The subspecies breeds and forages on alkali playas near large standing pools of shallow water.	No	No habitat present within study area.
Mountain plover *(Charadrius montanus)*	BLM, SC	The species breeds and forages in flat, short-grass prairie habitat and fallow agricultural fields with sparse vegetation.	No	No habitat present within study area.

Common Name (Scientific Name)	Management Status	Associated Habitat Types	Potential to Occur (Yes/No)	Notes
American peregrine falcon *(Falco peregrinus anatum)*	BLM, SC	The species breeds and forages in a variety of open habitats, including woodlands, forests, shrub-steppe, grasslands, marshes, and riparian habitats. It nests on cliffs and rarely on tall buildings near habitats with abundant prey.	Yes	Potential habitat present within study area.
Bald eagle *(Haliaeetus leucocephalus)*	BLM, SC	The species breeds near large lakes and rivers, in forested habitat where adequate prey and large, old cottonwood or conifer trees are available for nesting.	No	No habitat present within study area.
Long-billed curlew *(Numenius americanus)*	BLM, SC	The species breeds and forages in a variety of grassland habitats, including moist meadow grasslands, agricultural areas, and dry prairie uplands, usually near water.	No	No habitat present within study area.
White-faced ibis *(Plegadis chihi)*	BLM	The species breeds in tall emergent vegetation growing as "islands", surrounded by water (at least 18 inches deep). It forages in wet hay meadows and flooded agricultural croplands, marshes, shallow ponds, lakes, and reservoirs.	No	No habitat present within study area.
American white pelican *(Pelecanus erythrorhynchos)*	BLM, SC	The species breeds on islands in large bodies of water. It forages in marshes, lakes, and rivers.	No	No habitat present within study area.
Brewer's sparrow *(Spizella breweri)*	BLM	The species is a sagebrush obligate. It breeds and forages in sagebrush shrublands with abundant, scattered shrubs and short grasses.	No	No suitable habitat is present within study area.
Fish				
Arkansas darter *(Etheostoma cragini)*	BLM, ST	Spring-fed headwaters and creeks with cool, clear, shallow water, slow current, and herbaceous aquatic vegetation such as growths of watercress or other aquatic plants; often in pools with sand, fine gravel, or organic detritus substrate; sometimes in turbid water away from springs.	No	Localized populations occur in the Arkansas River drainage in southeastern Colorado from El Paso County eat to the Kansas border (Miller 1984).

Common Name (Scientific Name)	Management Status	Associated Habitat Types	Potential to Occur (Yes/No)	Notes
Reptiles				
Common kingsnake *(Lampropeltis getula)*	BLM, SC	Generally associated with lowland river valleys and irrigated fields on the floodplain of the Arkansas River, in rural residential areas in plains grassland, near stream courses, and in other areas dominated by shortgrass prairie.	No	Colorado distribution includes southeastern Colorado east of Pueblo.
Massasauga *(Sistrurus catenatus)*	BLM, SC	Dry plains grassland and sandhill areas; attracted to sandy soils supporting abundant rodent and lizard populations.	No	Colorado distribution includes southeastern Colorado east of Pueblo at elevations below about 5,500 ft.
Amphibians				
Northern cricket frog *(Acris crepitans)*	BLM, SC	This species inhabits the edges of sunny marshes, marshy ponds, and small slow-moving streams in open country.	No	Possibly extirpated, not seen in the state since 1979 (CPW 2019e).
Boreal toad *(Anaxyrus boreas boreas)*	BLM, SE	Species non-breeding habitat consists of spruce-fir forests and upland vegetation. Breeding habitat includes low-gradient streams, marshes, beaver ponds, small lakes and reservoirs, stock ponds, wet meadows, and seeps.	No	Study area is below the documented elevation range of the species (CPW 2019e).
Plain's leopard frog *(Rana blairi)*	BLM, SC	Streams, ponds, creek pools, reservoirs, irrigation ditches, and marshes in areas of prairie and desert grassland, farmland, and prairie canyons.	Yes	Colorado distribution includes the great plains portion of the Arkansas River drainage in southeastern Colorado (CPW 2019e).
Northern leopard frog *(Rana pipiens)*	BLM, SC	Species occurs in marshes, beaver ponds, streams, rivers, and lakes up to 9,000 ft. in elevation.	No	Colorado distribution is nearly statewide in mountains and lowlands, but scarce or absent in most of southeastern Colorado (CPW 2019).
Plants				
Rydberg's golden columbine *(Aquilegia chrysantha var. rydbergii)*	BLM	Riparian areas or rocky ravines, often associated with cottonwoods or willows, often found at the base of boulders. 5,000-8,200 ft.	Yes	Potential habitat present within study area.
Crandall's rockcress *(Arabis crandallii)*	BLM	Grows among limestone rocky areas between 8,000-10,000 ft., often associated with sagebrush shrublands or Ponderosa pine.	No	The study area is below the documented elevation range of the species.

Common Name (Scientific Name)	Management Status	Associated Habitat Types	Potential to Occur (Yes/No)	Notes
Dwarf milkweed *(Asclepias uncialis)*	BLM	Generally flat areas between 3,800-7,700 ft., often associated with shortgrass prairie, growing between bunchgrasses.	No	No suitable habitat is present within study area.
Brandegee's buckwheat *(Eriogonum brandegeei)*	BLM	Barren outcrops of white to grayish soils within open sagebrush and pinyon-juniper communities. 5,700-8,600 ft.	Yes	Potential habitat present within study area.
Colorado buckwheat *(Eriogonum coloradense)*	BLM	Found in an extremely wide range of habitats however all are of a higher elevation than the Parkdale project area. 8,700-14,000 ft.	No	The study area is below the documented elevation range of the species.
Gold blazingstar *(Mentzelia chrysantha)*	BLM	Often associated with barren shale or limestone hills in pinyon-juniper woodlands from 4,750-6,800 ft. Highly associated with Fremont county and the Arkansas river. Typically found on barren slopes and road cuts of limestone, shale, or alkaline clay.	Yes	Potential habitat present within study area.
Royal Gorge blazingstar *(Mentzelia densa)*	BLM	Occurs in open areas such as sandy washes and steep rocky slopes in pinyon-juniper woodlands and montane shrublands. Occurs almost exclusively in Fremont county between 5,400-7,700 ft.	Yes	Potential habitat present within study area.
Rock-loving neoparrya *(Neoparrya lithophila)*	BLM	Grows on volcanic substrates, in cracks or shelves usually with minimal talus. It is seen in moderate to steep rock outcrops, or outcrops of volcanic soils. It also occurs on sedimentary rock derived from extrusive volcanics (Dry Union Formation at Salida). The surrounding habitat is typically grasslands or pinon-juniper woodlands.	Yes	Documented occurrences are from extreme western Fremont County.
Few-flower ragwort *(Packera pauciflora)*	BLM	Wet meadows from 8,800-10,000 ft. Known populations in Colorado occur only in Park County.	No	The study area is below the documented elevation range of the species.
Degener's beardtongue *(Penstemon degeneri)*	BLM	This species is found in open pinyon-juniper woodlands between 5,900-9,500 ft. in elevation. Often found near canyon rims.	Yes	Potentially suitable habitat located within study area.
Pale blue-eyed grass *(Sisyrinchium pallidum)*	BLM	Species occurs in wet meadows usually where standing water is present until early July. Grows on alkaline soils between 6,300-9,700 ft.	No	No suitable habitat is present within study area. Documented occurrences are from extreme western Fremont County.

Common Name (Scientific Name)	Management Status	Associated Habitat Types	Potential to Occur (Yes/No)	Notes
Rolland's bulrush *(Trichophorum pumilum)*	BLM	Moss hummocks in rich fens, 9,300-11,000 ft., only known populations in Colorado are in Park county.	No	No suitable habitat is present within study area.

Source: BLM 2019a

BLM = Bureau of Land Management designated sensitive species; SC = State Species of Special Concern (not a statutory category); ST = State Threatened; SE = State Endangered

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