APPENDIX D-9

WILDLIFE BASELINE
FOR SMALL MINING PERMIT APPLICATION
BLACK HILLS BENTONITE, LLC. – PROPOSED KEYHOLE MINE PERMIT AREA

Prepared for:

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INTRODUCTION

In anticipation of submitting a small mine permit application, BKS Environmental Associates, Inc. (BKS, Gillette, Wyoming) was contracted on behalf of Black Hills Bentonite, LLC (BHB, Casper, Wyoming) to conduct wildlife baseline investigations for their proposed Keyhole Mine permit area (hereafter referred to as Permit Area) and surrounding vicinity. The investigations were completed to help identify potential and existing wildlife, as well as their associated habitats, that may be impacted by the project. The proposed Permit Area encompasses approximately 317 acres in NENW, SENW, NWNE, SWNE, SENE, and SE¼ of Section 16, Township (T) 50 North (N), Range (R) 66 West (W) and includes all access to the project off of the public road.

The wildlife baseline surveys were conducted within accessible portions of a 1.0-mile and 2.0-mile perimeter (survey area and expanded survey area, respectively) beyond the proposed Permit Area. The proposed Permit Area is located directly south of the Keyhole Reservoir in southwestern Crook County, and is accessed by the Old Sundance Road (Crook County Road 93). The proposed Permit Area and surrounding survey areas are illustrated in Figure D-9-1-1.

The objective of the wildlife baseline was to collect both quantitative and qualitative data on vertebrate species occurrence, abundance, diversity, and general habitat affinity in the wildlife survey areas, as recommended by the Wyoming Department of Environmental Quality-Land Quality Division (WDEQ-LQD) Guideline No. 5 (WDEQ-LQD 1994). The U.S. Fish and Wildlife Service (USFWS) also requires an assessment for vertebrate species of concern and their habitats prior to initiating construction activities. Wildlife species of concern include: those protected under the Endangered Species Act (ESA) or listed as candidate, proposed, or petitioned for listing under the ESA for Crook County, Wyoming (USFWS 2020a); avian species protected by the Migratory Bird Treaty Act (MBTA) (USFWS no date [n.d.]-a) and/or Bald and Golden Eagle Protection Act (BGEPA) (USFWS n.d.-b) and those listed as Birds of Conservation Concern (BCC) (USFWS 2008); and those listed by the Wyoming Game and Fish Department (WGFD; WGFD 2017) as Species of Greatest Conservation Need (SGCN).

A general habitat assessment for wildlife was performed during the inventory surveys. This included identification of habitats that could support threatened and endangered (T&E) species and/or other high-value or unusual wildlife. A review of previously collected data from other sources (primarily Bureau of Land Management [BLM] and WGFD) within the survey areas was conducted to compile a full history of wildlife use and activity in the general vicinity. Additionally, all incidental animal species (including any species of concern) within the survey areas were recorded during all baseline surveys. All protocols were designed to meet USFWS, WGFD, and WDEQ standards to provide the most complete wildlife data required for the project approval and permitting process.

Due to agency recommendations, available habitats, and/or nature of the project (small mine permit application), no standardized surveys were conducted for bats, small mammals, mammalian predators, furbearers, herptiles, fisheries, terrestrial or aquatic invertebrates, or periphyton as part of the baseline inventory. Nevertheless, BKS biologists watched for all of these taxa and/or their sign during all surveys and documented all occurrences within the proposed Permit Area and survey areas.

The proposed Permit Area and associated survey areas are described below, along with a description of the survey methods and results. The survey methods and results below are presented by animal group.

SURVEY AREA

The proposed Keyhole Mine Permit Area is located on State of Wyoming and Bureau of Reclamation lands in Section 16, T50N, R66W, approximately 1.9 miles southeast of Pine Haven, Wyoming. The northeastern portion of the proposed Permit Area is intersected by the Old Sundance Road (Crook County Road 93), which is directly south of Keyhole Reservoir. The 1.0-mile survey area encompasses approximately 6.9 square miles (mi^2) and includes the proposed Permit Area and a surrounding 1.0-mile perimeter. However, surface access was not available across approximately 3.4 non-contiguous mi^2 during baseline wildlife surveys (Figure D-9-1-1). The 2.0-mile expanded survey area encompasses approximately 19.4 mi^2 and includes the proposed Permit Area and a surrounding 2.0-mile perimeter. The entire expanded survey area was accessible during aerial surveys; however, surface access was not available across approximately 10.5 non-contiguous mi^2 during ground surveys (Figure D-9-1-1). Vantage points along multiple roads and two-tracks, and on accessible adjacent properties were utilized to offer visual coverage of some inaccessible lands.

The proposed Permit Area and surrounding survey areas lie south of Keyhole Reservoir within the transitional zone between the foothills of the Black Hills to the north and east and the level to rolling plains to the west. As a result, topography within the survey area is somewhat varied. Elevations in the 1.0-mile survey area range from 4,086 to 4,302 feet above sea level. The topography in the central and west-central extent is characterized by ridgelines and hills. Throughout the majority of the remaining area, the topography generally ranges from flat to rolling terrain. The lowest elevations are in the northeastern portion of the survey area along Keyhole Reservoir. The highest elevations are associated with a prominent ridgeline that runs northwest to southeast, west of the proposed Permit Area.

The climate is semi-arid, averaging approximately 14.1 inches of precipitation annually, with the highest monthly precipitation occurring between May and July. The 9-year mean minimum and maximum annual temperatures in January and July are 5.3 and 86.5 degrees Fahrenheit (° F), respectively (Western Regional Climate Center n.d.).

The 1.0-mile survey area is comprised of mixed habitats with approximately 75 percent shrublands (sagebrush steppe, greasewood flat); 11 percent mixedgrass prairie; 3 percent each of badlands and open water; 2 percent each of wetlands (open freshwater depression, closed depression, and saline depression), woodlands and savanna (ponderosa pine [*Pinus ponderosa*]), and developed; and 1 percent each of riparian woodlands and shrublands and introduced upland vegetation (annual grasslands) (National Land Cover Gap Analysis Program 2018). Shrublands were the most prevalent vegetation community within the proposed Permit Area and occurred throughout the area in a patchy mosaic of sparse to moderately dense stands. Moderately dense stands of Wyoming big sagebrush (*Artemisia tridentata*), the primary shrub species, occurred predominately within all or portions of SESE and SWSE Section 8, SWSW and central Section 9, and NW¼, central, and SE¼ Section 16. Sagebrush cover ranged from short to moderately tall (8 to 36 inches)

and sparse to moderately dense, with visual estimates of 5 to 8 percent canopy cover where it occurred. Other shrub or subshrub species, such as greasewood (*Sarcobatus* spp.) and fringed sagebrush (*Artemisia frigida*), also occurred as limited stands or in more scattered distributions.

Grasslands were interspersed with sparse or patchy shrublands and ponderosa pine woodlands in some locations. The largest expanses of grasslands were present in all or portions of central and NE¼ Section 8, E½ Section 15, NE¼ Section 20, S½ Section 21, and SW¼ Section 22. Dominant grassland species included blue grama (*Bouteloua gracilis*), cheatgrass (*Bromus tectorum*), crested wheatgrass (*Agropyron cristatum*), needle-and-thread (*Hesperostipa comata*), and smooth brome (*Bromus inermis*). Herbaceous cover varied considerably depending on the grassland communities, land use, and terrain (i.e., slope). Excessively eroded bare ground (i.e., badland features) were generally limited to the area southwest of the proposed Permit Area in all or portions of SW¼ Section 16 and N½ Section 21.

Bottomland habitats and riparian corridors were largely restricted to the Mule Creek and Iron Run drainages, as well as numerous old bentonite pits and impoundments within the survey area. Mule Creek runs southeast to northwest within the eastern portion of the survey area. Iron Run flows east to west in the east-central portion of the area. Several unnamed drainages also occur within the survey area. Keyhole Reservoir is the most significant source of surface water in the area and is located in E½ Section 9 and NWSW, SWSW, and NW¼ Section 10. Keyhole Reservoir contained water throughout the baseline survey period (though, it was frozen during the winter months) and hosted mud flats with little mesic vegetation. Several other unnamed impoundments in the area also held water during surveys conducted throughout 2020. Habitats along the margin of some unnamed reservoirs hosted an assortment of common, but limited, mature wetland vegetation, including: cattails (*Typha* spp.), rushes (*Scirpus* spp.), foxtail barley (*Hordeum jubatum*), thistle (*Cirsium* spp.), rose (*Rosa* spp.), prairie cordgrass (*Spartina pectinata*), and arrowhead (*Sagittaria cuneata*). Small stands or individual mature Russian olive (*Elaeagnus angustifolia*), peachleaf willow (*Salix amygdaloides*), and plains cottonwood (*Populus deltoides*) trees were also present.

Upland woodlands occurred as conifer communities, either ponderosa pine forest or mixed stands of ponderosa pine and Rocky Mountain juniper (*Juniperus scopulorum*), and were typically associated with the higher elevations in the west-central and central portions of the survey area.

Past and current land uses within the survey area include historical bentonite pits, occupied municipal and rural residences and outbuildings, livestock grazing, and active and passive public recreation associated with Keyhole Reservoir and State of Wyoming lands. The Old Sundance Road (Crook County Road 93), as well as several gravel and two-track roads, transect the survey area. Overhead transmission lines and distribution lines that service nearby residences are also present.

METHODS

All wildlife monitoring efforts in 2020 were conducted by qualified biologists following standard survey requirements and protocols used and approved by the USFWS, WGFD, and WDEQ-LQD for the baseline investigation. These survey methods were also consistent with the procedures and

schedules recommended in the WGFD's Handbook of Biological Techniques (2007) and Guideline 5 (1994) of the WDEQ-LQD Rules and Regulations. Prior to the baseline survey period, a survey plan was designed, delivered to, and approved by the USFWS (response letter 06E13000-2020-CPA-0016; USFWS 2019) and WGFD (response letter WER 14333.00; WGFD 2020b).

Before initiating the baseline inventory, BHB provided BKS with the delineation of the proposed Permit Area. Maps were then generated using the relevant survey perimeter (e.g., 1.0-mile or 2.0-mile) and known wildlife information was compiled for the survey areas after reviewing BLM, WGFD, and Wyoming Natural Diversity Database (WYNDD) records of known and potential wildlife occurrences in each survey area. The USFWS's interactive Information Planning and Conservation System (IPaC) and the WGFD's SGCN list (2017) were also accessed during preparation. The IPaC web-based system allows project proponents to access a list of potentially affected species of concern within the project area to help avoid, minimize, and mitigate impacts that may result from project activities. The IPaC report for the proposed Permit Area (USFWS 2020b) includes all listed T&E species and candidate species for ESA listing. In addition, the USFWS BCC list (2008) was obtained. The BCC list is divided into 37 Bird Conservation Region (BCR) lists for ecologically distinct regions of North America that host specific bird communities, habitats, and resource management issues. All of northeastern Wyoming, including the proposed Permit Area survey area, lies within the designated area for the BCR 17 (Badlands and Prairies) list.

Standard field guides and references (Burt and Grossenheider 1976, Baxter and Stone 1985, Jones et al. 1983, Clark and Stromberg 1987, Peterson 2020, Stokes and Stokes 2013, Sibley 2014, and Lewis 2011) were used to identify animals and their sign, when needed. These resources, as well as known occurrences or habitat data, were used to generate a potential species list for the expanded survey area (proposed Permit Area and a 2.0-mile perimeter) (Addendum D-9-1-A). Habitat requirements and availability, as well as critical (USFWS-designated) and crucial (WGFD-designated) habitats and geographical distribution maps, were considered for each species when the list was developed.

The survey methods and results below are presented by animal group.

Wildlife Habitat Assessment

Wildlife habitats within the proposed Keyhole Mine Permit Area and a 1.0-mile perimeter were assessed by BKS biologists in the field for the presence of any unusual or high-value wildlife habitats and/or features that could support USFWS T&E species. Nomenclature to describe those habitats was chosen to generally correspond with the terminology used in a separate baseline vegetation assessment (see Appendix D-8-1). For the purposes of the wildlife baseline, BKS biologists noted the general characteristics of each major habitat type and described them only as applied to wildlife use and/or value. More detailed information regarding the specific baseline vegetation study, including photographs and botanical T&E data, is summarized in a separate vegetation baseline report (Appendix D-8-1: 2020 Vegetation Baseline Study; BKS 2020).

Big Game

Winter distribution surveys for big game animals were conducted for the proposed Keyhole Mine Permit Area and a 2.0-mile perimeter (expanded survey area) (Figure D-9-1-1) in winter 2020. One aerial survey was conducted for big game on February 14 that year. The survey over the expanded survey area primarily targeted pronghorn (*Antilocapra americana*). Nevertheless, all big game species were recorded on all occasions. The aerial survey was conducted using a fixed-wing Cessna airplane to systematically fly over all portions of the expanded survey area. The survey consisted of flying north-south transects spaced at 0.62-mile (1.0-kilometer) intervals, starting with the eastern-most transect and progressing west. Flight speed and altitude were approximately 90 to 100 miles per hour (mph), and 200 to 300 feet above ground level, respectively. The survey began at 0705 hours and lasted until approximately 0750 hours. During the survey, two biologists counted big game within approximately a 0.25-mile-wide strip on either side of the flight path; incidental sightings of other wildlife were also noted. A navigator/recorder used 1:24,000 topographic maps for navigating and plotted all sightings with Universal Transverse Mercator (UTM) North American Datum 1983, Zone 13 North coordinates using a global positioning system (GPS) receiver. Data recorded included the number, species, sex, and age of animals seen; habitat type; and location. The survey date was targeted for a day with adequate snow cover, good light conditions, and favorable weather. The actual flight conditions for the big game survey were rated as great, with cold temperatures (19 ° F), sunny skies (0 percent cloud cover), moderate winds (15 to 17 mph), and 100 percent snow cover (2 to 10 inches estimated).

One ground survey was also completed for mule deer (*Odocoileus hemionus*), pronghorn, and white-tailed deer (*Odocoileus virginianus*) on February 28, 2020. The ground survey route was approximately 21.2 miles in length and utilized established roads within the proposed Permit Area and numerous other roads that extended into accessible portions of the expanded survey area. All big game observations were recorded with the number, species, age and sex of animals seen; habitat association; and location using UTM coordinates from a hand-held GPS receiver. The survey started at approximately 0900 hours, lasted until about 1230 hours, and was targeted for good lighting conditions and favorable weather. Care was taken to avoid double-counting individuals, especially along portions of the route that double-backed toward previously covered areas.

In addition to the specific big game surveys detailed above, WGFD big game range and other sensitive habitat use designations have been developed for the entire state depicting crucial and seasonal big game use areas. Using geographic information system (GIS) software, BKS biologists reviewed those data by overlaying them with the survey area to identify big game species' range designations associated with the proposed Permit Area.

Upland Game Birds

Winter Use Surveys

One winter use survey targeting upland game birds occurred on February 28, 2020 and was conducted within accessible portions of the proposed Permit Area and a surrounding 2.0-mile perimeter using a combination of vehicular and pedestrian surveys. Biologists investigated areas

of tall, dense sagebrush in places with less snow cover to look for grouse and/or their sign (tracks in the snow, droppings, feathers) during a colder period of the winter months.

Lek Searches

Surveys were conducted in spring 2020 to search for new grouse leks (no known leks exist within 2.0 miles of the proposed Permit Area) within suitable upland game bird habitats throughout accessible portions of the proposed Permit Area and a surrounding 2.0-mile perimeter. Searches for upland game bird leks were completed throughout the expanded survey area on the mornings of April 26 and May 5.

All lek searches were completed from the ground when favorable weather conditions (no precipitation with little or no wind) prevailed. Searches began no earlier than approximately 30 minutes before sunrise and lasted no later than 1 hour after sunrise. Biologists searched for displaying grouse while slowly driving through the area, concentrating efforts in suitable lek habitat (level to rolling sagebrush-grassland). Frequent stops were also made at vantage points to scan and listen for strutting birds. All observations or sign of upland game birds were recorded with UTM coordinates using GPS receivers throughout the duration of the baseline survey period. Observations of game birds and their sign included the number, species, age and sex (when possible) of animals seen; habitat association; and location.

Raptors

Nesting Surveys

Biologists conducted raptor nest surveys in the proposed Keyhole Mine Permit Area and accessible portions of its 2.0-mile perimeter in 2020. During all field work, guidelines recommended by Rosenfield et al. (2007) were followed to prevent nest abandonment and injury to eggs or young. Searches for new nests and productivity checks of active nests were conducted on several days from late April through early July. Biologists searched for new nests by slowly driving throughout the expanded survey area and frequently stopping to examine typical nesting habitat. Several accessible ponderosa pine woodland groves were searched on foot. While in the field, personnel continually watched for adult raptors. Accessible areas where individuals or pairs were repeatedly seen were also thoroughly searched for nests. All active nests were monitored until the pair's breeding attempt failed or young fledged.

Raptor nests located in accessible portions of the expanded survey area were mapped in the field using a hand-held GPS receiver; estimated coordinates were generated in GIS using an aerial photo for raptor nests situated on inaccessible lands. The status (i.e., active or inactive) and condition of nests and production of young at active nests were recorded during each visit.

Bald Eagle Winter Roost Surveys

Ground surveys specifically targeting bald eagle (*Haliaeetus leucocephalus*) winter roosts were conducted on February 5 and February 28, 2020; one aerial survey was also conducted on February 14 that year. All surveys encompassed the proposed Keyhole Mine Permit Area and a 1.0-mile

perimeter and were conducted from 30 minutes before sunrise to 1 hour after sunrise or from 1 hour before sunset to 30 minutes after sunset.

Ground surveys were conducted by slowly driving through the survey area and scanning areas with mature trees and open water (i.e., without ice cover). Biologists used binoculars and/or a spotting scope to identify perched bald eagles and prey or carcasses that might attract them. All sightings of perched and flying bald eagles were also recorded throughout the winter and the duration of the baseline surveys. All bald eagle observations included notes on the date, location, age (when possible), habitat, and activity.

The aerial survey utilized a fixed-wing Cessna airplane to systematically fly over all portions of the survey area. The survey consisted of flying north-south transects spaced at 0.62-mile (1.0-kilometer) intervals, starting with the eastern-most transect and progressing west. Special attention (e.g., additional passes, slower speeds) was provided in wooded areas that hosted mature trees and dead snags. Flight speed and altitude were approximately 90 to 100 mph, and 200 to 300 feet above ground level, respectively. Two biologists searched within approximately a 0.25-mile-wide strip on either side of the flight path; incidental sightings of other wildlife were also noted. A navigator/recorder used 1:24,000 topographic maps for navigating and plotted all sightings with UTM coordinates using GPS receivers. Data recorded included the number and species of animals seen, location, and habitat type. Survey dates were targeted for days with good light conditions and favorable weather.

Passerine Birds

The MBTA protects all native, migratory, nongame birds and their nests. Eagles receive additional protection under the BGEPA. The USFWS has further identified species, subspecies, and populations of migratory and non-migratory birds as BCC species that "*without additional conservation actions, are likely to become candidates for listing under the ESA*" (USFWS 2008). The conservation concerns may be related to population declines, small range or population sizes due to natural or human-caused factors, threats to habitat, or other factors. All of northeastern Wyoming, including the proposed Keyhole Mine Permit Area, is included in the designated area for the BCR 17 (Badlands and Prairies) list, which is comprised of 28 species. Additionally, the USFWS's IPaC system provides ready access to lists of potentially affected species of concern within a given project area in order to help avoid, minimize, and mitigate impacts that may result from project activities. As of October 2020, two avian species of concern were listed on the IPaC report for the proposed Permit Area (USFWS 2020b); one of the two species also occurs in the BCR 17 (Badlands and Prairies) list. A current SGCN list from the WGFD (WGFD 2017) has also identified 80 avian species of concern. The SGCN list is intended to identify species whose conservation status warrants increased management attention, and funding, as well as consideration in conservation, land use, and development planning in Wyoming.

Protocol-level surveys for migratory and breeding bird species, as well as focused surveys targeting particular avian species or taxa (e.g., grouse and raptors), were conducted in spring 2020 for the proposed Keyhole Mine project. Additionally, general reconnaissance surveys for all avian species were completed throughout the baseline monitoring period. Survey methods for the general and breeding bird surveys are outlined below, while further details regarding grouse and

raptor survey methods are provided above in the *Upland Game Birds* and *Raptors* sections, respectively.

General Surveys

General reconnaissance surveys for avian species and their habitats were conducted within the proposed Keyhole Mine Permit Area and the surrounding expanded survey area throughout 2020. General surveys targeting avian species of concern, as well as overall avian diversity, were conducted in conjunction with all other surveys throughout the baseline period. On those days, biologists drove and/or walked through the area while scanning and listening for avian species. In addition to searches in the common ponderosa pine woodland and sagebrush habitats within the expanded survey area, unique habitat features such as tree windbreaks, reservoirs, and agricultural fields were also thoroughly explored. Personnel also watched for avian species of concern while conducting all other field studies. All sightings were recorded, including the species, number of individuals, sex and age (if possible), location, habitat, and activity. A list of all avian species detected during the wildlife baseline period is included in Addendum D-9-1-A of this report.

Breeding Bird Surveys

Breeding bird survey protocols targeted habitats within the proposed Keyhole Mine Permit Area and accessible portions of the surrounding 0.5-mile perimeter. A total of 15 point count locations (n=15) were established along one to two individual transects in each of the three major habitat types: 1) ponderosa pine woodlands, 2) upland shrublands, and 3) bottomlands (Figure D-9-1-1). Due to limited availability, two ponderosa pine woodland transects were established for a total of five point count locations in that habitat. Otherwise, sampled habitats were intended to roughly span the proposed Permit Area and immediate vicinity to the degree they were available. Point count locations were designed as fixed-radius (100-meter) circular plots and were not located any closer than 200 meters apart. Once established, the precise coordinates of each plot (center point) was determined using a GPS receiver.

Each transect/plot was surveyed on both May 29 and May 30, 2020, beginning slightly after sunrise and completed by 0930 hours each day. Surveys were conducted under favorable weather conditions (calm to mild winds and no precipitation). The survey order of plots was rotated each day to minimize bias in the results due to time of day.

During the surveys, an observer stood at each point location for 6 minutes and recorded all birds heard and/or seen within 100 meters. A few minutes were allocated after arriving at each point to allow bird activity to resume to a normal level before starting the survey. The species and means of identification (seen, heard, or seen and heard) were recorded for each individual. Family groups and flocks were also noted. Birds merely flying over the plot and those seen or heard beyond the survey boundary were noted as incidentals and were not included in the data analyses. Exceptions to this approach were made for predominantly aerial species (e.g., swallows) that are typically seen flying rather than perched. Binoculars and pre-survey reviews of bird songs were used to aid with identification by sight and sound, respectively. Relative abundance was defined as the average number of birds recorded per point per day. Species richness represents the total number of species recorded in each habitat over the sampling period. Survey conditions ranged from clear to overcast

skies (0 to 100 percent cloud cover), temperatures between 45 and 65 ° F, and light to moderately strong winds (0 to 15 mph).

Federally Listed, Sensitive, and Other Species of Concern

During the wildlife baseline survey period, only one terrestrial vertebrate species in Crook County, Wyoming (and the Keyhole Mine survey area) was listed or involved in the listing process under the ESA: the northern long-eared bat (*Myotis septentrionalis*) (threatened) (USFWS 2020a and 2020b). The Ute ladies'-tresses (*Spiranthes diluvialis*) is also listed as threatened on the aforementioned county list; however, information and survey results for federally listed plants and/or their potential habitats are not included in this wildlife report. That information was addressed in a separate baseline vegetation study and the subsequent report (Appendix D-8-1: 2020 Vegetation Baseline Study; BKS 2020).

The northern long-eared bat is a medium sized bat found throughout eastern and central North America, with a species range that includes portions of Crook County, Wyoming. On April 2, 2015, the USFWS issued a final rule listing the northern long-eared bat as threatened (80 Federal Register [FR] 17974) and later accompanied that rule with a final 4(d) rule issued on January 14, 2016 (81 FR 1900) that exempts prohibition of incidental take from otherwise lawful management activities in areas not yet affected by white nose syndrome, a fungal (*Pseudogymnoascus destructans*) disease currently affecting many U.S. bat populations. On April 27, 2016, the USFWS determined that designating critical habitat for the northern long-eared bat was not prudent as releasing the known locations of this species wintering habitat could potentially increase risks to the species survival (81 FR 24707). In addition, the bat's summer habitat does not meet the USFWS's definition of critical habitat. Dense to moderately dense ponderosa pine woodlands, snags, ponds, and riparian corridors exist throughout portions of the proposed Permit Area and the surrounding vicinity, thereby, providing marginal quality seasonal roosting and foraging habitat. Although no specific surveys targeting northern long-eared bats were conducted for the proposed Permit Area and its 1.0-mile survey area, biologists remained vigilant for underground features that could host wintering bat colonies.

As mentioned above, the USFWS also considers 28 avian species to be BCC within BCR 17 (including the proposed Keyhole Mine project) (USFWS 2008) with one additional avian species of concern identified through the USFWS's IPaC system (USFWS 2020b). In addition to the USFWS avian lists and the aforementioned ESA species, the WGFD maintains a separate list of potentially imperiled or at-risk species in Wyoming as well. The WGFD SGCN list includes 229 total species, although many of these species are unlikely to occur in the survey area due to the absence of suitable habitat and/or limitations to their geographical range. Finally, the WGFD has delineated Wildlife Habitat Priority Areas (WGFD 2015a) across the entire state depicting crucial and seasonal wildlife use areas. Using GIS software, BKS biologists reviewed those data sources by overlaying them with the survey area to identify special wildlife species' range designations associated with the proposed Permit Area.

Aside from the aforementioned surveys, no other specific monitoring efforts were required or conducted for any additional federal (USFWS) or state (WGFD) species of concern during the 2020 Keyhole Mine wildlife baseline survey period. Nevertheless, BKS biologists obtained and

reviewed all of the previously mentioned species lists and GIS data prior to commencing field surveys, and watched for all species of concern and habitats that could support them while conducting all surveys. As indicated above, all wildlife sightings were noted during the entire baseline period and all documented species occurrences are included in Addendum D-9-1-A at the end of this document.

Other Animals

Black-tailed prairie dog (*Cynomys ludovicianus*) colonies were mapped within the proposed Permit Area and accessible portions of its 1.0-mile survey area using a hand-held GPS receiver to record coordinates around the outermost burrows of each occupied area; coordinates were taken every 10 meters. Prior to mapping, biologists scanned the colony, often from multiple vantage points, with binoculars and spotting scopes to identify areas of occupancy and their extent. Once prairie dogs were detected and counted, mapping was initiated. A start/stop coordinate was taken for the mapped occupied area to ensure the perimeter was fully complete at the end of the mapping effort by terminating at that same point from the opposite direction. During mapping, the GPS was checked regularly to ensure data accuracy and to avoid crossing previously mapped paths. Burrows were kept on the same side of the surveyor throughout the entire mapping effort to ensure that the outermost perimeter of all intact burrows was delineated. Black-tailed prairie dog colonies present on inaccessible lands were delineated using an aerial image within GIS.

No quantitative surveys targeting bats, small mammals, mammalian predators, furbearers, herptiles, fisheries, terrestrial or aquatic invertebrates, or periphyton were required or conducted specifically for the Keyhole Mine wildlife baseline inventory. However, all sightings of non-targeted animals throughout the proposed Permit Area and surrounding wildlife survey areas were recorded and maintained in a species list during all 2020 site visits.

RESULTS AND DISCUSSION

Addendum D-9-1-A, included at the end of this document, presents a summary table for all wildlife species (including all federal and state species of concern) that could potentially reside within or pass through (e.g., during migration) the proposed Keyhole Mine Permit Area and/or its 2.0-mile perimeter. Notations for individual species that were documented throughout the expanded survey area during the 2020 survey dates are also included.

Wildlife Habitat Assessment

Vegetation communities and habitats within the proposed Keyhole Mine Permit Area and a 1.0-mile perimeter were assessed in the field and generally described below as they apply to wildlife use. However, an in-depth baseline vegetation assessment was also completed and detailed in a separate vegetation report (Appendix D-8-1: Vegetation Baseline Study; BKS 2020). Within the proposed Keyhole Mine Permit Area and the surrounding 1.0-mile perimeter, six major wildlife habitat types (bentonite badland, big sagebrush shrubland, lowland grassland, ponderosa pine woodland, reclaimed bentonite pit, and upland grassland) were present. Those habitats correspond with the major plant communities defined during the vegetation baseline study. A distribution map and detailed description of the composition and extent of all vegetative communities in the

proposed Permit Area are provided in Appendix D-8-1: 2020 Vegetation Baseline Study (BKS 2020).

Bentonite Badland

The Bentonite Badland vegetation community was characterized by limited vegetation cover and shale outcrops. The Bentonite Badland vegetation community was located on relatively flat basins to highly dissected drainages and moderately steep hills and ridges with shallow, fine-textured soils in the southern portion of the proposed Permit Area.

Bentonite Badlands tend to support a lower diversity and abundance of wildlife species because they are less complex than other habitats and often host little vegetative cover and less overall vegetative diversity. Few species spend much time in this habitat but many species can be found traveling through this habitat to other more suitable areas including small mammals (e.g., mice and rabbits), predators (e.g., coyotes, foxes, hawks, and harriers), and big game.

Big Sagebrush Shrubland

Shrublands were the most prevalent vegetation community within the proposed Permit Area and its surrounding 1.0-mile perimeter. The dominant shrub in the area was Wyoming big sagebrush, but other shrub or subshrub species such as greasewood and fringed sagebrush, also occurred as limited stands or in more scattered distributions. Sagebrush cover ranged from short to moderately tall (8 to 36 inches) and sparse to moderately dense, with visual estimates of 5 to 8 percent canopy cover where it occurred. Moderately dense stands of Wyoming big sagebrush occurred predominately within all or portions of SESE and SWSE Section 8, SWSW and central Section 9, and NW¼, central, and SE¼ Section 16.

Shrubland habitats tend to be more open and less complex than woodlands or riparian shrubland habitats. Therefore, wildlife species that utilize them may be less diverse or spend less time in them, as they tend to offer less cover for refuge. However, some shrub-obligate species rely almost exclusively on these habitats, and certain components, such as increased cover compared to grasslands, can still make these habitats attractive to a variety of wildlife. As shrubland habitat is widely dispersed and often present in the transitional zones between other major habitat types, many of the wildlife species common to those other habitats are also present in the shrubland communities. Common species include a variety of mammals (big game, rabbits, mice, and voles), birds (sparrows, shrikes, grouse, and raptors), and reptiles (snakes and lizards).

Lowland Grassland

Mule Creek and Iron Run are the most sizable drainages within the survey area. Mule Creek runs southeast to northwest within the eastern portion of the survey area, but is located approximately 0.1 mile beyond the eastern edge of the proposed Permit Area. Iron Run flows east to west in the east-central portion of the survey area and is located approximately 0.3 mile beyond the eastern edge of the proposed Permit Area. Keyhole Reservoir is the most significant reservoir in the area; however, numerous smaller, unnamed pits and impoundments also occur throughout the area. Keyhole Reservoir is located approximately 0.3 mile beyond the proposed Permit Area; it retains

water year-round (although frozen in the winter months) and hosts mud flats with little mesic vegetation on its outer banks. A short stretch of an unnamed drainage and a couple old bentonite pits are located in the southeastern and eastern extent, respectively, of the proposed Permit Area. Habitats along the margin of some of these features hosted an assortment of common mesic vegetation types, including: cattails, rushes, foxtail barley, thistle, rose, and arrowhead, as well as small stands of Russian olive, peachleaf willow, and plains cottonwood trees.

Although some riparian or bottomland habitats within the survey area may be limited in size or ephemeral in water availability, water resources associated with these habitats can attract many wildlife species from the neighboring areas and often concentrate an abundance of animals in this habitat. As a result, the diversity of species can often be much higher here than in other habitats, especially when substantial aquatic habitat (e.g., Keyhole Reservoir) is present. Keyhole Reservoir provides sufficient bottomland habitat within the survey area to support fisheries, and other bottomland habitats likely host additional specialist riparian or aquatic species. A variety of species that nest/breed, rear young, forage, and refuge are often found disproportionately more in this habitat. Other species that heavily use this habitat include several mice and vole species, bats, waterfowl, shorebirds, and frogs and snakes.

Ponderosa Pine Woodland

Ponderosa pine woodland communities were typically located along ridgelines within the higher elevations and overlapped the proposed Permit Area in SENE, SWNE, SENW, NENW Section 16. In those areas, ponderosa pine was the dominant species, but Rocky Mountain juniper was also scattered throughout the stands of pine.

Ponderosa pine habitats support a relatively high diversity of wildlife species. These habitats generally host several levels of open canopy cover that can provide for an array of different species, while also allowing for easy movement between canopy levels and a greater overall utilization of the habitat. Mammalian species such as deer, squirrels, and chipmunks are common. Avian species such as nuthatches, chickadees, warblers, and woodpeckers are abundant in this habitat, as well. Mature ponderosa pine can also provide suitable nesting substrate for many forest raptor species, and dead snags or loose bark can be used as refuge for roosting bats.

Reclaimed Bentonite Pit

The Reclaimed Bentonite Pit vegetation community was characterized by a heterogenous mix of sparsely vegetated to moderately vegetated reclaimed grassland communities due to past bentonite mining and reclamation activity. This vegetation community was located along the western and eastern boundaries of the proposed Permit Area primarily on relatively flat to moderately sloping hills. Limited moderately steep slopes, likely remnant pit walls, and incised erosional features were also present within this vegetation community.

Reclaimed Bentonite Pits tend to support a lower diversity and abundance of wildlife species because they are less complex than other habitats and, depending on the stage of reclamation, can be comprised of areas with less overall vegetative diversity and host little vegetative cover. However, successful revegetation on reclaimed lands can sufficiently support numerous wildlife

species, especially those typical in the area. Numerous big game, raptor, and songbird species utilize reclaimed habitat throughout the year. Small mammals (voles and mice), as well as herptiles (amphibians and reptiles), also can be seen in these areas.

Upland Grassland

Upland grasslands were most extensive in all or portions of central and NE¼ Section 8, E½ Section 15, NE¼ Section 20, S½ Section 21, and SW¼ Section 22. Collectively, the grassland habitats are characterized by flat to gently rolling slopes with a general lack or isolated inclusion of shrubs and/or woody canopy. Clearly, this habitat type was dominated by grasses and forbs, with the most common species including blue grama, crested wheatgrass, and needle-and-thread. Shrubs were very limited, but Wyoming big sagebrush and rose were occasionally present in sparse numbers or near the edges of grassland habitats.

Grasslands tend to support a lower diversity and abundance of wildlife species because they are less complex than other habitats and often comprised of non-native plant species or less overall vegetative diversity. The timing of fire disturbances and maturation of this habitat are key factors in determining their current value to wildlife species. Nevertheless, suitable environmental conditions can produce grassland habitats that support both grassland specialist species and generalist species for a variety of activities (e.g., nesting, foraging, and refuge). Small mammals such as mice and voles, as well as their predators (e.g., coyotes, foxes, hawks, and harriers) are common in grassland habitats. Other mammals, such as deer, can be found foraging or resting in this habitat. Additional avian species that utilize grasslands include several species of sparrows and some grouse. Many snake species are also regularly found in grassland habitats.

Big Game

The ability of observers to detect big game animals during aerial surveys, and to a lesser degree ground surveys, is influenced by many factors, including snow cover, light conditions, habitat, topography, weather, group size, activity, sex and age, and position of animals relative to the aircraft or observer (Samuel et al. 1987, Bodie et al. 1995). Any large disparity between seasonal counts is probably influenced to a large degree by these biases. Furthermore, habitat associations recorded during surveys are biased toward level, open habitats (e.g., grasslands and agricultural lands) where animals are most visible, as opposed to woodlands or broken terrain. As previously described, the primary purpose of the winter big game surveys was to determine the abundance and distribution of big game species.

Two big game species were observed during the wildlife baseline survey period (February 2020 through October 2020); pronghorn and mule deer. Both species were documented during the aerial winter survey in 2020 and during other various seasonal wildlife ground surveys throughout the baseline survey period.

Pronghorn

Six (6) pronghorn herds (162 animals) were observed throughout the expanded survey area during the big game baseline surveys (winter flight and ground survey combined) (Table D-9-1-1).

Pronghorn herds ranged from 7 to 50 individuals, with a mean group size of 27.0 animals. Pronghorn were most prevalent in the northwestern, central, and south-central portions of the expanded survey area. During the February 2020 surveys, most (44 percent) pronghorn were recorded in sagebrush-grassland habitat, with the remaining individuals observed in sagebrush or grassland habitats (Table D-9-1-1). No pronghorn herds were observed in the proposed Permit Area during the big game baseline surveys (winter flight and ground survey).

Pronghorn throughout the expanded survey area are included in the North Black Hills herd unit designated by the WGFD. The WGFD estimated the 2019 pronghorn population for the Black Hills Herd Unit to be approximately 15,360 animals, with a herd objective of 17,000 (WGFD 2019a).

All of the proposed Permit Area and the expanded survey perimeter are classified by the WGFD as yearlong range for pronghorn (WGFD 2011). Yearlong range is defined by the WGFD as typically suitable for big game requirements throughout the various seasons of the year.

Mule Deer

Eleven (11) mule deer herds (95 animals) were observed throughout the expanded survey area during the big game baseline surveys (winter flight and ground survey combined) (Table D-9-1-2). Mule deer herds ranged from 3 to 21 individuals, with a mean group size of 8.6 animals. Mule deer were most prevalent in the northwestern, west-central, central, and east-central portions of the expanded survey area. During the February 2020 surveys, most (38 percent) mule deer were recorded in sagebrush habitat, with the remaining individuals in shrubland, residence (lawn), disturbance (road), or sagebrush-grassland habitats (Table D-9-1-2). Three mule deer herds (25 individuals) were observed in the proposed Permit Area during the 2020 big game baseline surveys (winter flight and ground survey); all observations within the proposed Permit Area occurred during the ground survey.

Mule deer throughout the expanded survey area are included in the Black Hills herd unit designated by the WGFD. The WGFD estimated the 2019 mule deer population for the Black Hills Herd Unit to be approximately 27,602 animals, with a herd objective of 30,000 (WGFD 2019b).

All of the proposed Permit Area and the expanded survey area are classified by the WGFD as mule deer yearlong range (WGFD 2016). As mentioned above, yearlong range is described as typically suitable for big game requirements throughout the various seasons of the year

White-tailed Deer

No white-tailed deer were observed throughout the expanded survey area during the big game baseline surveys (winter flight and ground survey combined). Although no individuals of this species were documented, the area is within the species range.
White-tailed deer throughout the expanded survey area are included in the Black Hills herd unit designated by the WGFD. The WGFD estimated the 2019 white-tailed deer population for the Black Hills Herd Unit to be approximately 52,219 animals, with a herd objective of 55,000 (WGFD 2019b).

All of the proposed Permit Area and the expanded survey perimeter are classified by the WGFD as white-tailed deer yearlong range (WGFD 2012). As mentioned above, yearlong range is defined as typically suitable for big game requirements throughout the various seasons of the year

Upland Game Birds

Sharp-tailed Grouse

Sharp-tailed grouse (*Tympanuchus phasianellus*) use a variety of habitats, including open and brushy grassland, shrub steppe, meadows, mountain shrub, and riparian habitats. This species is typically associated with open landscapes, selecting habitats that host particular vegetative characteristics (e.g., height, density, and composition) among relatively flat to gentle topography (Natural Resources Conservation Service and Wildlife Habitat Council 2007). No known sharp-tailed grouse leks exist throughout the expanded survey area, and no new leks were discovered during the surveys in 2020.

Although no sharp-tailed grouse leks were identified during the wildlife baseline surveys, marginally suitable habitats that could support the species are present in the general vicinity. Additionally, one pile of white, desiccated sharp-tailed grouse droppings was documented in sagebrush-grassland habitat within SENE Section 21 on July 3. On October 9, 2020, three sharp-tailed grouse flew from grassland habitat in SESE Section 9.

Greater Sage-grouse

On October 2, 2015, the USFWS issued a decision that the greater sage-grouse (*Centrocercus urophasianus*) (hereafter sage-grouse) was not warranted for listing under the ESA and would no longer be designated as a candidate species for listing (80 FR 59857). The USFWS also indicated in their 2015 decision that another status review will be conducted for the species in 5 years, but at this time, the sage-grouse is no longer considered a candidate species and will continue to be managed at the state level (i.e., by the WGFD). Suitable sage-grouse habitat is present within the proposed Permit Area and expanded survey area in locations with moderately dense stands of sagebrush. No known sage-grouse leks exist within 2.0 miles of the proposed Permit Area; the closest occupied lek is the Wind Creek 2 lek located approximately 4.6 miles to the south (WGFD 2020a). The proposed Permit Area does not overlap any portion of a sage-grouse core population area or defined connectivity corridor designated by the State of Wyoming (Executive Order No. 2019-3 2019). The nearest core area, Thunder Basin, is located to the southwest approximately 8.3 miles from the proposed Permit Area (WGFD 2015b). Sagebrush-grasslands are scattered throughout the area with moderately dense stands of sagebrush in all or portions of SESE and SWSE Section 8, SWSW and central Section 9, and NW¼, central, and SE¼ Section 16. Moist drainages and mesic habitats surrounding impoundments throughout the area could provide brood rearing and late summer habitat, whereas areas of higher sagebrush density may provide some potential for nesting grouse. Limited, moderately suitable winter habitat is present within the survey area in locations with topographic relief and relatively tall stands of sagebrush that could provide substantial refuge and forage during the winter months. No sage-grouse or sign thereof (e.g., feathers, droppings, tracks) were documented during the 2020 surveys.

Wild Turkeys

Wild turkeys (*Meleagris gallopavo*) are largely found in open forest habitats. This species generally forages for plant matter in small to large flocks. No known wild turkey strutting sites exist throughout the expanded survey area, and no new strutting sites were discovered during surveys in 2020.

Although no wild turkey strutting sites were identified, suitable habitats that could support this species are present in the general vicinity, and two observations of wild turkeys were recorded in 2020. On February 28, 24 wild turkeys were recorded in ponderosa pine woodlands in SENE Section 14. One individual was seen walking along ponderosa pine woodland habitat in NWSE Section 7 on April 26.

Raptors

Raptor Surveys

All raptor species are protected under the MBTA, and eagles receive additional protection under BGEPA. These laws afford special protections for raptors by safeguarding individuals as well as nests, eggs, and young.

Current agency databases (e.g., BLM and WGFD) have identified no known raptor nests throughout the expanded survey area. Nevertheless, BKS biologists documented four raptor nests within that area during the 2020 breeding season (Table D-9-1-3 and Figure D-9-1-1). Three of the raptor nests were located in ponderosa pine trees; the remaining nest was situated on an artificial nesting platform. None of the nests are located within the proposed Permit Area, and two raptor nests (Nests 1 and 4) were located on inaccessible lands (i.e., coordinates at these sites were estimated).

Three of the four known raptor nests were active during the 2020 breeding season. One adult golden eagle (*Aquila chrysaetos*) was seen laying on Nest 1 in mid-May; however, on a subsequent visit in early July no adult or young golden eagles were observed at the nest. In late April, one adult and at least one young great horned owl (*Bubo virginianus*) were recorded in Nest 2. A pair of red-tailed hawks (*Buteo jamaicensis*) was seen defending the area near Nest 3 in late April, and during a subsequent survey in early July, one dead red-tailed hawk nestling was documented on the ground near the nest. No adult red-tailed hawks were observed in the area on the latter visit. The remaining nest was inactive during the 2020 breeding season. The placement, composition, and size of Nest 4 suggests it is a likely osprey (*Pandion haliaetus*) nest.

No intact raptor nests will be physically impacted by the proposed Keyhole Mine project, as all identified raptor nests are located beyond the proposed Permit Area (Figure D-9-1-1). The red-tailed hawk and osprey nests (Nests 3 and 4, respectively) are both located within the USFWS-recommended buffers of 0.25 mile to disturbance for those species (USFWS 2020c). The golden eagle and great horned owl nests (Nests 1 and 2, respectively) are both located beyond the USFWS-recommended buffer of 0.5 and 0.125 mile, respectively, to disturbance for those species (USFWS 2020c).

Aside from the aforementioned observations, several other raptors were recorded within the expanded survey area during wildlife baseline surveys conducted in 2020; all bald eagle observations are discussed below in the *Bald Eagle Winter Roost Surveys* section. During the winter roost survey on February 14, one rough-legged hawk (*Buteo lagopus*) was seen perched in grassland habitat in SWNE Section 9, one red-tailed hawk was documented in grassland habitat in NESE Section 15, and one golden eagle was observed in grassland habitat in NWNE Section 28. Five rough-legged hawks were recorded circle-soaring over ponderosa pine woodland hills in NENW Section 17 on February 28. On that same date, one golden eagle was seen perched on a fence post in grassland habitat in NESE Section 3. One female northern harrier (*Circus hudsonius*) was documented in flying over sagebrush-grassland in NWSW Section 10 on October 9. Historical data (WYNDD 2020) shows that golden eagles, northern harriers, and ospreys have been documented within T50N, R66W. At least one golden eagle was observed in August 2013 and one northern harrier in January 1989. One adult osprey was recorded in NW¼ Section 16 on September 3, 1979 and one osprey was seen flying in SWSE Section 10 on April 25, 2018.

Bald Eagle Winter Roost Surveys

No known bald eagle nests or winter roosts exist throughout the survey area; however, one bald eagle was recorded during winter roost surveys conducted in 2020. On February 5, one adult bald eagle was seen flying south toward ponderosa pine woodland habitat in NWSW Section 9.

Aside from the bald eagle observation mentioned above during targeted winter roost surveys, several other individuals were incidentally documented during other surveys conducted in 2020. On April 26, one adult bald eagle was observed perched in a tree within NESW Section 9. Two adult bald eagles were recorded perched in that same tree on May 29 during the breeding bird survey. Historical data (WYNDD 2020) indicates at least four other bald eagle observations occurred within T50N, R66W: one each in October 1993, January 2010, June 2013, and July 2013. Two adults and one juvenile bald eagle were seen during the January 2010 observation; no other data was provided for the remaining historical records.

Suitable bald eagle roosting and nesting habitat occurs among the ponderosa pine woodlands within the survey area. Keyhole Reservoir represents a reliable food source, as a sizeable water body that supports adequate fisheries and waterfowl habitat. However, the reservoir is frozen over in most winters. There are at least three black-tailed prairie dog colonies in the area and sheep ranching operations nearby that could serve as additional food sources for bald eagles in the area.

Passerine Birds

Addendum D-9-1-A lists all potential avian species that could occur in the area, including any species of concern tracked by the USFWS and WGFD. Addendum D-9-1-A also provides a brief description of each species' protection status, historical records, and documented occurrence from the specific baseline surveys conducted in 2020 for the proposed Keyhole Mine project.

General Surveys

A total of 68 avian species were documented either incidentally or during targeted avian surveys throughout the expanded survey area during wildlife baseline surveys conducted in 2020 (Appendix D-9-1-A). Three additional avian species have been historically documented throughout the expanded survey area for a total of 71 avian species.

Table D-9-1-4 lists the 29 avian species of concern for the proposed Keyhole Mine project identified by the USFWS (2020b) IPaC report and/or the BCR 17 list (USFWS 2008). That table also provides a brief description of each species' primary nesting habitat(s) and records of their potential occurrence and actual occurrence throughout the expanded survey area. In 2020, eight avian species of concern were recorded near the Keyhole Mine project during specific avian surveys or incidentally while conducting other wildlife monitoring (Table D-9-1-4). Those species included the bald eagle, Brewer's sparrow (*Spizella breweri*), dickcissel (*Spiza americana*), golden eagle, grasshopper sparrow (*Ammodramus savannarum*), loggerhead shrike (*Lanius ludovicianus*), sage thrasher (*Oreoscoptes montanus*), and upland sandpiper (*Bartramia longicauda*). None of the species recorded are listed as T&E under the ESA. Based on available nesting habitat throughout the expanded survey area, 4 of the 29 species are possible or likely nesting species (Table D-9-1-4); three additional species (the bald eagle, golden eagle, and upland sandpiper) could also likely occur as a yearlong resident (bald eagle and golden eagle) or common summer resident (upland sandpiper). These seven species may experience impacts to individuals associated with the proposed project, primarily through habitat loss, degradation, or fragmentation. The 22 remaining avian species of concern listed in Table D-9-1-4 are not expected to be impacted by the proposed project due to habitat and range considerations and/or the lack of disturbance in certain habitats.

The WGFD also maintains a SGCN list (WGFD 2017) that contains 80 avian species. Thirteen (13) of those 80 species were documented within the expanded survey area during baseline surveys conducted in 2020. Those species included the American white pelican (*Pelecanus erythrorhynchos*), bald eagle, Brewer's sparrow, Clark's grebe (*Aechmophorus clarkii*), common yellowthroat (*Geothlypis trichas*), dickcissel, golden eagle, grasshopper sparrow, great blue heron (*Ardea herodias*), loggerhead shrike, sage thrasher, upland sandpiper, and western grebe (*Aechmophorus occidentalis*). Two additional SGCN avian species have been historically documented within the area: the Franklin's gull (*Leucophaeus pipixcan*) and common nighthawk (*Chordeiles minor*) (WYNDD 2020). All raptor (bald eagle and golden eagle) observations documented during the baseline survey period were detailed above in the *Raptors* section. Observations of seven additional avian species of concern (USFWS or WGFD) listed above were primarily documented during point count surveys in 2020 and are detailed below in the *Breeding Bird Surveys* section. The remaining six avian species of concern are described below.

The common nighthawk is considered an abundant summer resident in Wyoming (Orabona et al. 2016) and has been readily recorded breeding in Crook County. This species prefers open and semi-open habitats, including forest (e.g., ponderosa pine) clearings, prairie grasslands, and sagebrush, where they are able to feed in the air. Although the common nighthawk was not seen in 2020, WYNDD (2020) data shows that one individual was recorded foraging in grassland habitat within SWSW Section 2 on August 12, 2018.

Common yellowthroats are listed as uncommon summer residents in Wyoming (Orabona et al. 2016) and have been recorded breeding in Crook County. Generally, this species can be found in wetlands and marshes as well as along river edges with low, dense vegetation where they forage on insects. On July 3, 2020, one common yellowthroat was heard singing near an impoundment in NWSE Section 21.

The dickcissel is considered an uncommon summer resident in Wyoming (Orabona et al. 2016) and has been recorded breeding in Crook County. This species prefers Great Plains grasslands, but can also be seen in pastures and agricultural fields where they feed on both insects and seeds. One dickcissel was seen and heard singing near an impoundment in SWSW Section 22 on July 3, 2020.

Franklin's gulls are listed as common summer residents in Wyoming (Orabona et al. 2016) and have been observed in Crook County. This species can be found near marshes and lakes where it forages on insects, seeds, fish, and other aquatic invertebrate species. No Franklin's gulls were documented in 2020; however, WYNDD (2020) data shows that one adult was recorded resting within SESE Section 9 on July 14, 1988.

The loggerhead shrike is considered a common summer resident in Wyoming (Orabona et al. 2016) and has been recorded breeding in Crook County. Loggerhead shrikes prefer open habitats with short vegetation and/or low trees including pastures, agricultural fields, open woodlands, prairies, and sagebrush, where they feed on insects, small vertebrates, and carrion. In 2020, this species was observed on two separate occasions. One loggerhead shrike was seen perched on a fence in sagebrush-grassland habitat in NESE Section 10 on May 5. On July 3, one individual was recorded near an impoundment in NWSE Section 21.

Upland sandpipers are listed as an uncommon summer resident in Wyoming (Orabona et al. 2016), and have been observed breeding in Crook County. This species prefers grasslands and prairies where they forage on insects, terrestrial invertebrates, and seeds. One upland sandpiper was documented walking in sagebrush-grassland habitat in NWSE Section 16 within the proposed Permit Area on May 5, 2020.

Breeding Bird Surveys

In 2020, five breeding bird point count sites were surveyed on two consecutive mornings in each of three major habitat types (bottomlands, ponderosa pine woodlands, and upland shrublands) (Figure D-9-1-1). Again, point count locations within the sampled habitats were located throughout the proposed Permit Area and surrounding vicinity to the degree those habitats were available.

Results from the breeding bird surveys yielded 43 species (including an unknown gull and unknown swallow species) and an overall abundance of 12.97 birds per point per day (Table D-9-1-5). A majority (41 [not including the two unknown species] of 68 species or 60 percent) of all avian species documented during the baseline period were recorded during the breeding bird surveys, indicating that a large proportion of the recorded avian species were utilizing the habitats within the survey area for breeding and likely nesting purposes. The Canada goose (*Branta*

canadensis) had the highest abundance value from the breeding bird surveys, although the western meadowlark (*Sturnella neglecta*) was also particularly abundant (Table D-9-1-5). These two species were the only species having an abundance value greater than 1.00 (Table D-9-1-5), but seven others were also fairly common with an average abundance per point across all habitat types greater than or equal to 0.50. Just under half (47 percent) of the recorded species had an abundance value greater than 0.20 birds per point (i.e., one individual for every five points), which is largely attributed to the diversity of available habitats within the survey area. Overall abundance and species richness were highest in the bottomland habitats. High counts in bottomland habitat largely reflect the influence of water features on avian abundance and species richness. The ponderosa pine woodlands also included relatively high species richness, which likely reflects the influence of structural taxonomic diversity in vegetation on species richness (Dickson et al. 1993, Hurlbert 2004). Relative abundance and species richness were lowest in the upland shrubland habitat; a habitat typically composed of fewer vegetative species with a fairly simple structure. Of the 43 species documented during breeding bird surveys in 2020, 4 species were recorded within all three habitat types and 34 species were associated with only a single habitat type. Nests of four of the 43 species documented during breeding bird surveys in 2020 were encountered during point count surveys or additional wildlife surveys conducted during the baseline period. These species included the cliff swallow (*Petrochelidon pyrrhonota*), great horned owl, killdeer (*Charadrius vociferus*), and red-tailed hawk. The great horned owl and red-tailed hawk nests were described in the *Raptors* section above. On May 30, 2020, cliff swallows were observed building nests on a cement culvert crossing under the Old Sundance Road (Crook County Road 93) in NWNW Section 15. On that same day, one killdeer nest containing four eggs was found within a road right-of-way in NWNW Section 15. No other nests for the avian species documented during breeding bird surveys were encountered during point count surveys or any additional wildlife surveys during the baseline period. However, their presence throughout the spring and summer and documented behavior (e.g., singing and territorial defense) clearly indicate that many were likely nesting among suitable habitats within the survey area.

Seven avian species identified by the USFWS IPaC report and/or BCR 17 (Badlands and Prairie) list and WGFD avian SGCN were documented during point count surveys in 2020 for the proposed Keyhole Mine project. These species included the American white pelican, Brewer's sparrow, Clark's grebe, grasshopper sparrow, great blue heron, sage thrasher, and western grebe (Table D-9-1-5). Of these, the American white pelican and Brewer's sparrow were the most abundant species.

Federally Listed, Sensitive, and Other Species of Concern

The USFWS (2020b) IPaC report for the proposed Keyhole Mine Permit Area listed only two species, the Ute ladies'-tresses (threatened) and northern long-eared bat (threatened) as federally listed T&E, candidate, proposed, or petitioned species that occur or could occur within the proposed Permit Area. No critical habitats for any federally listed species have been designated by the USFWS in the proposed Permit Area and surrounding 1.0-mile survey area. Designated areas of influences (USFWS 2020d) for both the northern long-eared bat and Ute ladies'-tresses overlap all portions of the proposed Permit Area and surrounding survey area. The northern long-eared bat is also a wildlife species of management concern at the State level (WGFD 2017).

The northern long-eared bat is considered common in the nearby Black Hills of Wyoming and South Dakota, but uncommon or rare in the lower elevations and open habitats surrounding the Black Hills (WYNDD 2012). On April 2, 2015, the USFWS issued a final rule listing the northern long-eared bat as threatened (80 FR 17974) and later accompanied that rule with a final 4(d) rule issued on January 14, 2016 (81 FR 1900) that exempts prohibition of incidental take from otherwise lawful management activities in areas not yet affected by white nose syndrome, a disease currently affecting many North American bat populations. The northern long-eared bat typically emerges at dusk to fly through the understory of forested hillsides and ridges, feeding on a variety of insects caught in flight or gleaned from vegetation. In the summer, male and reproductive female bats roost singly or in colonies in cracks, crevices, cavities, and under the bark of live and dead trees, while other males and non-reproductive females roost in cooler places like caves and underground mines. Breeding occurs in late summer and fall when bats swarm at hibernacula entrances, which are also typically located in large underground openings.

Substantial woodlands are present within the west-central extent of the survey area. Additionally, the riparian corridors of Mule Creek and Iron Run, substantial aquatic habitat associated with Keyhole Reservoir, and other unnamed impoundments in the area represent substantial suitable foraging habitat, as these areas tend to concentrate insect activity and provide movement corridors and temporary roost sites for foraging bats. However, the proposed Permit Area alone hosts very few woodlands, moist drainages, reservoirs or impoundments, or exposed vertical rock structure of any kind that would provide suitable habitat for this species. Vegetation communities in the proposed Permit Area are dominated by upland shrubland habitats, and no known underground cavities or caves exist in the area. Two stands of mixed ponderosa pine and juniper occur within the proposed Permit Area in SENE and SWNE Section 16 and NENW and SENW Section 16. The closest confirmed occurrence of white-nose syndrome occurs at least 48 miles southeast of the proposed Permit Area in Custer County, South Dakota (White-Nose Syndrome Response Team 2020). Based on the recent findings related to the occurrence of white-nose syndrome, the 4(d) rule and its allowed exceptions do not apply to activities associated with the Keyhole Mine project. No bat species were incidentally documented during any of the baseline surveys, but no specific bat surveys (acoustical or visual) were attempted for the Keyhole Mine project.

Avian species listed under the USFWS (2008) BCR 17 (Badlands and Prairie) list and IPaC report for the proposed Keyhole Mine project (USFWS 2020b), as well as the WGFD SGCN list of potentially imperiled or at-risk avian species in Wyoming were detailed in several results sections above, including the *Upland Game Birds*, *Raptors*, and *Passerine Birds*. The USFWS IPaC report for the proposed Keyhole Mine project (USFWS 2020b) and the WGFD SGCN list also include other taxa of vertebrate wildlife species (mammals, amphibians, reptiles, and fish) that are potentially imperiled or at-risk in Wyoming. Two of those species were documented during baseline surveys in 2020: the black-tailed prairie dog and northern leopard frog (*Lithobates pipiens*). Both the black-tailed prairie dog and northern leopard frog are listed as WGFD SGCN and are addressed below in the *Other Animals* section. All documented wildlife species noted during the entire baseline period within the expanded survey area are included in Appendix D-9-1-A at the end of this document.

One WGFD habitat priority (crucial or enhancement) area overlaps a portion of the expanded survey area. The extreme east-central part of the expanded survey area is classified as the North

Black Hills terrestrial crucial habitat (WGFD 2015a). No other WGFD habitat priority areas or WGFD key nongame wildlife areas (WGFD 2015c) exist within the expanded survey area.

Other Animals

Incidental sightings of animals not targeted by systematic surveys were recorded during all wildlife monitoring efforts in 2020 throughout the Keyhole Mine expanded survey area (Appendix D-9-1-A). No quantitative surveys targeting bats, small mammals, mammalian predators, furbearers, amphibians, reptiles, fish, terrestrial or aquatic invertebrates, or periphyton were required or conducted specifically for the Keyhole Mine wildlife baseline inventory.

Six mammal species, 68 bird species, and 1 species each of amphibians, reptiles, and fish were documented during the Keyhole Mine wildlife baseline survey period (February 2020 through October 2020). Three additional avian species have been historically documented within the expanded survey area (WYNDD 2020). The vast majority of those species were listed and discussed in their respective preceding sections. However, 4 mammal species, 17 avian species, and 1 each of amphibian, reptile, and fish species were recorded within the wildlife survey area and not previously mentioned.

The four other documented mammal species included the black-tailed prairie dog, red fox (*Vulpes vulpes*), red squirrel (*Tamiasciurus hudsonicus*), and white-tailed jackrabbit (*Lepus townsendii*). The black-tailed prairie dog is listed as a WGFD SGCN. Portions of two black-tailed prairie dog colonies (A and B) overlap the 1.0-mile survey area (SWSE Section 4 and NWNE Section 9; and SESE Section 5 and NENE Section 8) and at least one other known colony (C) exists within the expanded survey area (SWSE Section 3 and NWNE and NENW Section 10) (Figure D-9-1-1). All of Colony A and portions of both Colony B and Colony C are located on inaccessible lands and were mapped using an aerial photo in GIS; accessible portions of each Colony B and Colony C were mapped in the field. All three colonies were active in 2020 and ranged in size from approximately 11 acres to 26 acres. One red fox was seen in sagebrush habitat in NESE Section 16 within the proposed Permit Area during the aerial big game survey conducted on February 14. On July 3, two red foxes were observed wrestling within a prairie dog colony in NENE Section 8. One red fox was recorded running through a prairie dog colony in NWNE Section 9 on October 9. A couple of red squirrels were heard during breeding bird surveys along the ponderosa pine woodland transect (P1). One white-tailed jackrabbit was documented hopping through sagebrush habitat in NWSE Section 16 within the proposed Permit Area on February 28. On April 26, one white-tailed jackrabbit was seen within ponderosa pine woodland habitat in SENE Section 16.

Several waterfowl and shorebird species were recorded at or near the Keyhole Reservoir during baseline surveys conducted in 2020. These species included the American avocet (*Recurvirostra americana*), American coot (*Fulica americana*), double-crested cormorant (*Phalacrocorax auritus*), eared grebe (*Podiceps nigricollis*), green-winged teal (*Anas carolinensis*), pie-billed grebe (*Podilymbus podiceps*), spotted sandpiper (*Actitis macularius*), and willet (*Tringa semipalmata*). The remaining avian species documented included the black-billed magpie (*Pica hudsonia*), cedar waxwing (*Bombycilla cedrorum*), dark-eyed junco (*Junco hyemalis*), eastern kingbird (*Tyrannus tyrannus*), horned lark (*Eremophila alpestris*), lark bunting (*Calamospiza*

melanocorys), orange-crowned warbler (*Vermivora celata*), Swainson's thrush (*Catharus ustulatus*), and yellow warbler (*Setophaga petechia*).

The only amphibian species recorded during surveys conducted in 2020 was the northern leopard frog. On May 30, northern leopard frogs were seen in the Keyhole Reservoir along the bottomland transect during breeding bird surveys. The northern leopard frog is included on the WGFD SGCN list.

The bullsnake (*Pituophis catenifera sayi*) was the only reptile species observed during baseline surveys. On October 9, one bullsnake was seen sunning itself on the edge of a prairie dog burrow in SWSE Section 4. Historical data (WYNDD 2020) also shows that one bullsnake was recorded in sagebrush habitat in NESE Section 16 within the proposed Permit Area on June 3, 1991.

The common carp (*Cyprinus carpio*) was the only fish species documented throughout the expanded survey area in 2020. Numerous common carp were observed in the Keyhole Reservoir along the bottomland transect during the breeding bird surveys.

CONCLUSIONS

No significant impacts to wildlife are anticipated from the disturbance and eventual reclamation associated with the proposed Keyhole Mine project. The habitats in the proposed Permit Area are typical of the surrounding area, and no critical or unique wildlife features or habitats are present. The site is currently subjected to periodic human activity associated with recreation activities.

Despite rather diverse habitats beyond the Permit Area (e.g., the Keyhole Reservoir to the north and the ponderosa pine woodlands to the east and west) that support an array of wildlife species, the Permit Area itself hosts limited vegetation diversity. Surveys conducted from February 2020 through October 2020 demonstrate that common wildlife species, such as pronghorn, white-tailed jackrabbits, and western meadowlarks, typically use the sagebrush and grassland communities within the Permit Area. Countless other species likely move through and use the area too, especially in the spring and summer months when species diversity is higher in the overall region, but the proposed Permit Area provides little unique value relative to the surrounding lands. More complex vegetative structure and water resources are largely located beyond the proposed Permit Area.

Two big game species, pronghorn and mule deer, were observed in the expanded survey area during the baseline survey period. Disturbances from the proposed mining operations will likely result in habitat loss, degradation, and modification; and avoidance of the area by the species or obstacles to their movement. Associated recreation activities, such as hunting, may also be influenced. However, the entire expanded survey area is designated as pronghorn, mule deer, and white-tailed deer yearlong range suggesting that mining disturbances are unlikely to compromise the integrity of the regional deer populations. No white-tailed deer observations from targeted surveys or incidental sightings were documented during the baseline period, indicating that this species utilizes the expanded survey area only to a limited extent.

Suitable habitats for upland game birds, including sharp-tailed grouse, sage-grouse, and wild turkey exist within the expanded survey area. Sagebrush-grassland habitats, preferred by sharp-tailed grouse and sage-grouse, are scattered throughout the area. Woodlands, typically used by wild turkeys, are also common throughout the expanded survey area. No known grouse lek sites or wild turkey strutting sites occur within the expanded survey area. The nearest known occupied sage-grouse lek (Wind Creek 2) is located approximately 4.6 miles to the south. During the 2020 baseline surveys, three sharp-tailed grouse, one pile of white, desiccated sharp-tailed grouse droppings, and a couple of wild turkey observations were recorded within the expanded survey area. No sage-grouse or sign thereof was documented in the expanded survey area. Mining operations from the proposed Keyhole Mine project would likely cause some loss or modification of existing sharp-tailed grouse and sage-grouse habitat, as the sagebrush is cleared for mining. The other species of game bird (wild turkey) that use the area focus their activities in the ponderosa pine woodlands, which will largely not be disturbed by this project. Associated recreation activities may also be influenced.

Four raptor nest sites were identified through the baseline surveys. None of the nest sites will be physically disturbed by the proposed Keyhole Mine project; however, Nest 3 is located less than 0.1 mile (approximately 215 feet) north of the proposed Permit Area. Three of the four nests were active during the 2020 breeding season with a golden eagle pair occupying Nest 1, a great horned owl pair fledging one young from Nest 2, and a red-tailed hawk pair failing to produce any documented fledglings at Nest 3. The final status of Nest 1 was undetermined, as the nest was located on inaccessible lands. The remaining nest (Nest 4) is designated as an osprey nest and was inactive that year. Nests 3 and 4 are both located within the USFWS-recommended buffer of 0.25 mile to disturbance for those species (USFWS 2020c). Nests 1 and 2 are both located beyond the USFWS-recommended buffers of 0.5 and 0.125 mile, respectively, to disturbance for those species (USFWS 2020c).

Suitable winter roosting habitat for bald eagles is present within the ponderosa pine woodlands in the expanded survey area. Keyhole Reservoir is a reliable food source for a portion of the year, where adequate fisheries and waterfowl habitat are present; however, the reservoir is frozen over in most winters. Three occupied prairie dog colonies, as well as sheep ranching operations, occur within the expanded survey area and may serve as additional food sources. Mining operations from the proposed Keyhole Mine project would likely cause little to no loss or modification to existing bald eagle winter roosting habitat.

Thirteen avian species of concern were documented within the expanded survey area during the 2020 baseline surveys. Species recorded included the American white pelican, bald eagle, Brewer's sparrow, Clark's grebe, common yellowthroat, dickcissel, golden eagle, grasshopper sparrow, great blue heron, loggerhead shrike, sage thrasher, upland sandpiper, and western grebe. Two additional avian species of concern were historically observed in the expanded survey area: the common nighthawk and Franklin's gull. Several of these species may experience impacts to individuals associated with the proposed project, primarily through habitat loss, degradation, or fragmentation.

No current T&E vertebrate species or their critical habitats were recorded within the proposed Keyhole Mine Permit Area during the 2020 baseline surveys. While it is possible that the northern

long-eared bat (an ESA threatened species) could occur in the survey area, any bats that might be present are most likely associated with the ponderosa pine woodlands to the east or west, the Keyhole Reservoir to the north, or the Mule Creek and Iron Run to the east. Little woodland or mesic habitat occurs within the Permit Area itself and will be physically impacted by the proposed Keyhole Mine project. The 4(d) rule that accompanies the listing designation for this species also exempts prohibition of incidental take from otherwise lawful management activities in areas not yet affected by white nose syndrome, which includes the proposed Permit Area. One WGFD terrestrial crucial habitat priority area (North Black Hills) overlaps the extreme east-central portion of the expanded survey area. No WGFD key nongame wildlife areas exist within the survey area.

The proposed Keyhole Mine Permit Area is comprised of common native habitat types and largely composed of sagebrush-grassland habitat. These habitats support a variety of wildlife species known to frequent the region either as year-round residents, or as common seasonal residents or migrants. No species-specific concerns were identified during surveys completed in 2020. Analysis of the project indicates that no significant impacts to wildlife are anticipated from construction and operation of the proposed permit. It is possible that some individuals of a variety of species may experience direct mortality during construction and operation. However, any losses to individuals are expected to be minimal. Therefore, though the proposed project may impact individuals of some species, it is not likely to result in adverse impacts to populations. However, the USFWS, WDEQ, and WGFD will be notified as appropriate if new information is obtained for the area or potential conflicts with wildlife are identified.

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Table D-9-1-1. Habitat associations of recorded pronghorn during big game surveys (aerial and ground combined) conducted for the Keyhole Mine wildlife baseline in February 2020.

PRONGHORN		
HABITAT	No.	Percent
Grassland	32	20
Sagebrush	59	36
Sagebrush-grassland	71	44
TOTAL	162	100

Table D-9-1-2. Habitat associations of recorded mule deer during big game surveys (aerial and ground combined) conducted for the Keyhole Mine wildlife baseline in February 2020.

Mule Deer		
HABITAT	No.	Percent
Disturbance	9	10
Lawn	21	22
Sagebrush	36	38
Sagebrush-grassland	4	4
Shrubland	25	26
TOTAL	95	100

Table D-9-1-3. Raptor nests within the Keyhole Mine Permit Area and expanded survey area.

Map ID	Species[1]	Substrate	UTM X	UTM Y	¼ ¼ Section, T(N), R(W)	2020 Status	2020 Condition[2]
			NAD83, Zone 13N				
1	*GOEA*	*Ponderosa Pine*	*513386*	*4908551*	*NESW 7, 50, 66*	*Occupied-Undetermined*	*Good*
2	GHOW	Ponderosa Pine	516090	4907659	NWNW 16, 50, 66	Active-1 young	Good
3	RTHA	Ponderosa Pine	517341	4907409	SENE 16, 50, 66	Active-Fail	Good
4	*OSPR*	*Platform*	*517942*	*4907182*	*SWNW 15, 50, 66*	*Inactive*	*Good*

[1] GHOW = great horned owl, GOEA = golden eagle, OSPR = osprey, RTHA = red-tailed hawk.

[2] Good = nest is in need of only minor attention in order for it to be used.

Italicized Records = nests were located on inaccessible lands, and nest coordinates were estimated using an aerial photo in GIS.

Table D-9-1-4. Nesting habitats and potential and documented occurrence of the avian species of concern for the U.S. Fish and Wildlife Services' IPaC Trust Resource Report[1] and Birds of Conservation Concern[2] (Bird Conservation Region 17) within the Keyhole Mine Permit Area expanded survey area[3].

Species	Primary Nesting Habitat(s)	Potential Occurrence Based on Available Habitats within the Expanded Survey Area	Documented Occurrence throughout the Expanded Survey Area in 2020
USFWS IPaC Trust Resource Report: 2 species			
Bald eagle* (*Haliaeetus leucocephalus*)	Riparian	Uncommon Nesting/ Common Resident	X
Lesser yellowlegs (*Tringa flavipes*)	Shoreline, Aquatic areas	Uncommon Nesting/ Uncommon Migrant	---
Bird Conservation Region 17 Species: 27 Additional Species			
American bittern (*Botaurus lentiginosus*)	Marshes	Uncommon Nesting/ Uncommon Migrant	---
Baird's sparrow (*Ammodramus bairdii*)	Grasslands	Uncommon Nesting/ Uncommon Migrant	---
Black-billed cuckoo (*Coccyzus erythropthalmus*)	Woodlands, Riparian	Uncommon Nesting/ Uncommon Summer Resident	---
Brewer's sparrow (*Spizella breweri*)	Shrub-steppe, Montane shrublands	Likely Nesting/ Common Summer Resident	X
Burrowing owl (*Athene cunicularia*)	Grasslands, Shrub-steppe	Uncommon Nesting/ Uncommon Summer Resident	---
Chestnut-collared longspur (*Calcarius ornatus*)	Grasslands, Mixedgrass prairie	Uncommon Nesting/ Uncommon Summer Resident	---
Dickcissel (*Spiza americana*)	Grasslands	Uncommon Nesting/ Uncommon Summer Resident	X
Ferruginous hawk (*Buteo regalis*)	Shrub-steppe, Grasslands	Uncommon Nesting/ Uncommon Resident	---

Table D-9-1-4. Continued.

Species	Primary Nesting Habitat(s)	Potential Occurrence Based on Available Habitats within the Survey Area	Documented Occurrence throughout the Expanded Survey Area in 2020
Bird Conservation Region 17 Species: 27 Additional Species, Continued.			
Golden eagle (*Aquila chrysaetos*)	Cliffs	Uncommon Nesting/ Common Resident	X
Grasshopper sparrow (*Ammodramus savannarum*)	Grassland	Likely Nesting/ Common Summer Resident	X
Horned grebe (*Podiceps auritus*)	Lakes, Ponds	Uncommon Nesting/ Uncommon Migrant	---
Lewis's woodpecker (*Melanerpes lewis*)	Woodlands, Riparian	Uncommon Nesting/ Uncommon Summer Resident	---
Loggerhead shrike (*Lanius ludovicianus*)	Shrub-steppe	Possibly Nesting/ Common Summer Resident	X
Long-billed curlew (*Numenius americanus*)	Grasslands	Uncommon Nesting/ Uncommon Summer Resident	---
Marbled godwit (*Limosa fedoa*)	Shortgrass prairie	Uncommon Nesting/ Uncommon Migrant	---
McCown's longspur (*Rhynchophanes mccownii*)	Shortgrass steppe	Uncommon Nesting/ Uncommon Summer Resident	---
Mountain plover (*Charadrius montanus*)	Shortgrass prairie	Uncommon Nesting/ Uncommon Summer Resident	---
Peregrine falcon (*Falco peregrinus*)	Cliffs	Uncommon Nesting/ Uncommon Resident	---
Pinyon jay (*Gymnorhinus cyanocephalus*)	Ponderosa pine savannah, Pinyon-juniper, Shrublands	Uncommon Nesting/ Uncommon Resident	---

Table D-9-1-4. Continued.

Species	Primary Nesting Habitat(s)	Potential Occurrence Based on Available Habitats within the Survey Area	Documented Occurrence throughout the Expanded Survey Area in 2020
Bird Conservation Region 17 Species: 27 Additional Species, Continued.			
Prairie falcon (*Falco mexicanus*)	Cliffs	Uncommon Nesting/ Uncommon Resident	---
Red-headed woodpecker (*Melanerpes erthrocephalus*)	Riparian, Low elevation conifer	Uncommon Nesting/ Uncommon Summer Resident	---
Sagebrush sparrow (*Artemisiospiza nevadensis*)	Shrub-steppe	Uncommon Nesting/ Uncommon Migrant	---
Sage thrasher (*Oreoscoptes montanus*)	Shrub-steppe	Likely Nesting/ Common Summer Resident	X
Short-eared owl (*Asio flammeus*)	Grasslands, shrub-steppe	Uncommon Nesting/ Uncommon Resident	---
Sprague's pipit (*Anthus spragueii*)	Mixed-grass prairie	Uncommon Nesting/ Uncommon Migrant	---
Upland sandpiper (*Bartramia longicauda*)	Grasslands, Shrub-steppe	Uncommon Nesting/ Common Summer Resident	X
Yellow rail (*Coturnicops noveboracensis*)	Marshes	Uncommon Nesting/ Uncommon Migrant	---

[1] IPaC Trust Resource Report – Keyhole Mine Permit Area (U.S. Fish and Wildlife Service [USFWS] September 2020); (https://ecos.fws.gov/ipac/).

[2] Birds of Conservation Concern (BCC) 2008 (USFWS 2008), Bird Conservation Region (BCR) 17 (Badlands and Prairies) list; current through 2020 <https://www.fws.gov/migratorybirds/pdf/grants/BirdsofConservationConcern2008.pdf>.

[3] The expanded survey area extends for 2.0 miles beyond the proposed Keyhole Mine Permit Area.

* Species also included on the current BCR 17 list (USFWS 2008).

Table D-9-1-5. Relative abundance, species richness, and habitat associations from breeding bird surveys conducted for the Keyhole Mine wildlife baseline.

	(Number/point/day)			
Species	**BL**	**P**	**SH**	**Total[1]**
Canada goose (*Branta canadensis*)	5.7	---	---	1.90
Western meadowlark (*Sturnella neglecta*)	1.7	0.9	2.2	1.60
American white pelican* (*Pelecanus erythrorhynchos*)	2.8	---	---	0.93
Brewer's sparrow* (*Spizella breweri*)	0.2	---	2.1	0.77
Cliff swallow (*Petrochelidon pyrrhonota*)	1.9	---	---	0.63
Mallard (*Anas platyrhynchos*)	1.9	---	---	0.63
Unknown gull species	1.7	---	---	0.57
Western wood-pewee (*Contopus sordidulus*)	---	1.6	---	0.53
Brown-headed cowbird (*Molothrus ater*)	0.1	0.8	0.6	0.50
Killdeer (*Charadrius vociferus*)	1.1	0.1	0.1	0.43
Mourning dove (*Zenaida macroura*)	---	1.1	0.1	0.40
Red-winged blackbird (*Agelaius phoeniceus*)	1.1	---	---	0.37
Vesper sparrow (*Pooecetes gramineus*)	0.2	---	0.8	0.33
American robin (*Turdus migratorius*)	0.1	0.7	0.1	0.30
Gadwall (*Mareca strepera*)	0.9	---	---	0.30
American crow (*Corvus brachyrhynchos*)	0.4	0.4	---	0.27
Brewer's blackbird (*Euphagus cyanocephalus*)	0.5	0.2	---	0.23
Black-capped chickadee (*Poecile atricapillus*)	---	0.7	---	0.23
Chipping sparrow (*Spizella passerina*)	---	0.7	---	0.23
Turkey vulture (*Cathartes aura*)	0.6	---	---	0.20

Table D-9-1-5. Continued.

Species	(Number/point/day) BL	P	SH	Total[1]
American wigeon (*Mareca americana*)	0.4	---	---	0.13
Red-tailed hawk (*Buteo jamaicensis*)	---	0.4	---	0.13
Grasshopper sparrow* (*Ammodramus savannarum*)	0.3	---	---	0.10
Great horned owl (*Bubo virginianus*)	---	0.3	---	0.10
Ring-billed gull (*Larus delawarensis*)	0.3	---	---	0.10
Sage thrasher* (*Oreoscoptes montanus*)	---	---	0.3	0.10
Western grebe* (*Aechmophorus occidentalis*)	0.3	---	---	0.10
American goldfinch (*Spinus tristis*)	---	0.2	---	0.07
Field sparrow (*Spizella pusilla*)	---	---	0.2	0.07
Great blue heron* (*Ardea herodias*)	0.2	---	---	0.07
House wren (*Troglodytes aedon*)	---	0.2	---	0.07
Northern flicker (*Colaptes auratus*)	---	0.2	---	0.07
Northern pintail (*Anas acuta*)	0.2	---	---	0.07
Northern shoveler (*Spatula clypeata*)	0.2	---	---	0.07
Red-breasted nuthatch (*Sitta canadensis*)	---	0.2	---	0.07
Western kingbird (*Tyrannus verticalis*)	---	0.2	---	0.07
Clark's grebe* (*Aechmophorus clarkii*)	0.1	---	---	0.03
Hairy woodpecker (*Picoides villosus*)	---	0.1	---	0.03
Lark sparrow (*Chondestes grammacus*)	---	0.1	---	0.03
Mountain bluebird (*Sialia currucoides*)	---	0.1	---	0.03
Unknown swallow species	---	0.1	---	0.03

Table D-9-1-5. Continued.

Species	(Number/point/day) BL	P	SH	Total[1]
Wood duck (*Aix sponsa*)	0.1	---	---	0.03
Yellow-rumped warbler (*Setophaga coronata*)	---	0.1	---	0.03
Total abundance (#birds/plot/per day)	**23.0**	**9.4**	**6.5**	**12.97**
Species richness (# of species)	**25**	**22**	**9**	**43**
Species of concern (# of species)	**6**	**0**	**2**	**7**

[1] Total = Average of total observations over all point counts (n=30).
* Denotes species of concern listed under the ESA, BCR 17 (Badlands and Prairie), IPaC report, and the WGFD SGCN list.

Habitat Codes
BL = Bottomland
P = Ponderosa pine woodland
SH = Upland shrubland

ADDENDUM D-9-1-A

BLACK HILLS BENTONITE – PROPOSED KEYHOLE MINE PERMIT AREA POTENTIAL AND DOCUMENTED WILDLIFE SPECIES OCCURRENCE LISTS

Received

MAY 10 2021

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PROPOSED KEYHOLE MINE PERMIT
POTENTIAL[1] AND DOCUMENTED MAMMALIAN SPECIES LIST

Common Name[2]	Scientific Name[2]	Recorded During Baseline Surveys[3]	Special Status Designation[4]
Insectivores			
Masked shrew	*Sorex cinereus*	---	---
Hayden's shrew	*Sorex haydenii*	---	SGCN
Merriam's shrew	*Sorex merriami*	---	---
Bats			
Western small-footed myotis	*Myotis ciliolabrum*	---	SGCN
Long-eared myotis	*Myotis evotis*	---	SGCN
Northern long-eared bat	*Myotis septentrionalis*	---	ESA, SGCN
Little brown myotis	*Myotis lucifugus*	---	SGCN
Fringed myotis	*Myotis thysandoes*	---	SGCN
Long-legged myotis	*Myotis volans*	---	SGCN
Yuma myotis	*Myotis yumanensis*	---	SGCN
Eastern red bat	*Lasuirus borealis*	---	SGCN
Hoary bat	*Lasiurus cinereus*	---	---
Silver-haired bat	*Lasionycteris noctivagans*	---	---
Big brown bat	*Eptesicus fuscus*	---	---
Townsend's big-eared bat	*Corynorhinus townsendii*	---	SGCN
Pallid bat	*Antrozous pallidus*	---	SGCN
Hares and Rabbits			
Desert cottontail	*Sylvilagus audubonii*	---	---
Mountain cottontail	*Sylvilagus nuttallii*	---	---
Cottontail species	*Sylvilagus* spp.	---	---
Black-tailed jackrabbit	*Lepus californicus*	---	---
White-tailed jackrabbit	*Lepus townsendii*	X	---
Rodents			
Least chipmunk	*Tamias minimus*	---	---
Yellow-bellied marmot	*Marmota flaviventris*	---	---
Thirteen-lined ground squirrel	*Ictidomys tridecemlineatus*	---	---
Eastern fox squirrel	*Sciurus niger*	---	---
Red squirrel	*Tamiasciurus hudsonicus*	X	---

PROPOSED KEYHOLE MINE PERMIT
POTENTIAL[1] AND DOCUMENTED MAMMALIAN SPECIES LIST (CONTINUED)

Common Name[2]	Scientific Name[2]	Recorded During Baseline Surveys[3]	Special Status Designation[4]
Rodents (Continued)			
Northern flying squirrel	*Glaucomys sabrinus*	---	SGCN
Northern pocket gopher	*Thomomys talpoides*	---	---
Sand hills pocket gopher	*Geomys lutescens*	---	SGCN
Black-tailed prairie dog	*Cynomys ludovicianus*	X	SGCN
Olive-backed pocket mouse	*Perognathus fasciatus*	---	SGCN
Silky pocket mouse	*Perognathus flavus*	---	SGCN
Hispid pocket mouse	*Chaetodipus hispidus*	---	SGCN
Western harvest mouse	*Reithrodontomys megalotis*	---	---
Plains harvest mouse	*Reithrodontomys montanus*	---	SGCN
White-footed deermouse	*Peromyscus leucopus*	---	---
North American deermouse	*Peromyscus maniculatus*	---	---
Northern grasshopper mouse	*Onychomys leucogaster*	---	---
Bushy-tailed woodrat	*Neotoma cinerea*	---	---
Southern red-backed vole	*Myodes gapperi*	---	---
Long-tailed vole	*Microtus longicaudus*	---	---
Prairie vole	*Microtus ochrogaster*	---	---
Meadow vole	*Microtus pennsylvanicus*	---	---
House mouse	*Mus musculus*	---	---
Meadow jumping mouse	*Zapus hudsonius*	---	SGCN
North American porcupine	*Erethizon dorsatum*	---	---
American beaver	*Castor canadensis*	---	---
Common muskrat	*Ondatra zibethicus*	---	---
Carnivores			
Coyote	*Canis latrans*	---	---
Gray wolf	*Canis lupus*	---	---
Red fox	*Vulpes vulpes*	X	---
Common gray fox	*Urocyon cinereoargentus*	---	---
Swift fox	*Vulpes velox*	---	SGCN
Black bear	*Ursus americanus*	---	---

PROPOSED KEYHOLE MINE PERMIT POTENTIAL[1] AND DOCUMENTED MAMMALIAN SPECIES LIST (CONTINUED)

Common Name[2]	Scientific Name[2]	Recorded During Baseline Surveys[3]	Special Status Designation[4]
Carnivores (Continued)			
Grizzly bear	*Ursus arctos*	---	---
Northern raccoon	*Procyon lotor*	---	---
Short-tailed weasel	*Mustela erminea*	---	---
Long-tailed weasel	*Mustela frenata*	---	---
Black-footed ferret	*Mustela nigripes*	---	SGCN
Least weasel	*Mustela nivalis*	---	SGCN
American mink	*Vison vison*	---	---
American badger	*Taxidea taxus*	---	---
Striped skunk	*Mephitis mephitis*	---	---
Mountain lion	*Puma concolor*	---	---
Bobcat	*Lynx rufus*	---	---
Ungulates			
Elk	*Cervus canadensis*	---	---
Mule deer	*Odocoileus hemionus*	X	---
White-tailed deer	*Odocoileus virginianus*	---	---
Pronghorn	*Antilocapra americana*	X	---

PROPOSED KEYHOLE MINE PERMIT POTENTIAL[1] AND DOCUMENTED AVIAN SPECIES LIST

Common Name[2]	Scientific Name[2]	Recorded During Baseline Surveys[3]	Special Status Designation[4]
Loons and Grebes			
Common loon	*Gavia immer*	---	SGCN
Yellow-billed loon	*Gavia adamsii*	---	---
Pied-billed grebe	*Podilymbus podiceps*	X	---
Horned grebe	*Podiceps auritus*	---	BCC
Red-necked grebe	*Podiceps grisegena*	---	---
Eared grebe	*Podiceps nigricollis*	X	---
Western grebe	*Aechmophorus occidentalis*	X	SGCN
Clark's grebe	*Aechmophorus clarkii*	X	SGCN

PROPOSED KEYHOLE MINE PERMIT POTENTIAL[1] AND DOCUMENTED AVIAN SPECIES LIST (CONTINUED)

Common Name[2]	Scientific Name[2]	Recorded During Baseline Surveys[3]	Special Status Designation[4]
Cormorants and Shags			
Double-crested cormorant	*Phalacrocorax auritus*	X	---
Pelicans			
American white pelican	*Pelecanus erythrorhynchos*	X	SGCN
Herons and Bitterns			
American bittern	*Botaurus lentiginosus*	---	BCC, SGCN
Great blue heron	*Ardea herodias*	X	SGCN
Great egret	*Ardea alba*	---	---
Snowy egret	*Egretta thula*	---	SGCN
Cattle egret	*Bubulcus ibis*	---	SGCN
Black-crowned night-heron	*Nycticorax nycticorax*	---	SGCN
Ibis			
White-faced ibis	*Plegadis chihi*	---	SGCN
Swans, Geese, Ducks, and Waterfowl			
Trumpeter swan	*Cygnus buccinator*	---	SGCN
Tundra swan	*Cygnus columbianus*	---	---
Greater white-fronted goose	*Anser albifrons*	---	---
Snow goose	*Chen caerulescens*	---	---
Ross's goose	*Chen rossii*	---	---
Canada goose	*Branta canadensis*	X	---
Wood duck	*Aix sponsa*	X	---
Green-winged teal	*Anas crecca*	X	---
Mallard	*Anas platyrhynchos*	X	---
Northern pintail	*Anas acuta*	X	---
Blue-winged teal	*Anas discors*	---	---
Cinnamon teal	*Anas cyanoptera*	---	---
Northern shoveler	*Anas clypeata*	X	---
Gadwall	*Anas strepera*	X	---
American wigeon	*Anas americana*	X	---
Canvasback	*Aythya valisineria*	---	---

PROPOSED KEYHOLE MINE PERMIT POTENTIAL[1] AND DOCUMENTED AVIAN SPECIES LIST (CONTINUED)

Common Name[2]	Scientific Name[2]	Recorded During Baseline Surveys[3]	Special Status Designation[4]
Swans, Geese, Ducks, and Waterfowl (Continued)			
Redhead	*Aythya americana*	---	---
Ring-necked duck	*Aythya collaris*	---	---
Lesser scaup	*Aythya affinis*	---	---
Surf scoter	*Melanitta perspicillata*	---	---
White-winged scoter	*Melanitta fusca*	---	---
Long-tailed duck	*Clangula hyemalis*	---	---
Bufflehead	*Bucephala albeola*	---	---
Common goldeneye	*Bucephala clangula*	---	---
Barrow's goldeneye	*Bucephala islandica*	---	---
Hooded merganser	*Lophodytes cucullatus*	---	---
Common merganser	*Mergus merganser*	---	---
Red-breasted merganser	*Mergus serrator*	---	---
Ruddy duck	*Oxyura jamaicensis*	---	---
Vultures			
Turkey vulture	*Cathartes aura*	X	---
Diurnal Raptors			
Bald eagle	*Haliaeetus leucocephalus*	X	BCC, SGCN
Northern harrier	*Circus cyaneus*	X	---
Sharp-shinned hawk	*Accipiter striatus*	---	---
Cooper's hawk	*Accipiter cooperii*	---	---
Northern goshawk	*Accipiter gentilis*	---	SGCN
Swainson's hawk	*Buteo swainsoni*	---	SGCN
Red-tailed hawk	*Buteo jamaicensis*	X	---
Ferruginous hawk	*Buteo regalis*	---	BCC, SGCN
Rough-legged hawk	*Buteo lagopus*	X	---
Golden eagle	*Aquila chrysaetos*	X	BCC, SGCN
Osprey	*Pandion haliaetus*	***	---
American kestrel	*Falco sparverius*	---	SGCN
Merlin	*Falco columbarius*	---	SGCN

PROPOSED KEYHOLE MINE PERMIT POTENTIAL[1] AND DOCUMENTED AVIAN SPECIES LIST (CONTINUED)

Common Name[2]	Scientific Name[2]	Recorded During Baseline Surveys[3]	Special Status Designation[4]
Diurnal Raptors (Continued)			
Gyrfalcon	*Falco rusticolus*	---	---
Peregrine falcon	*Falco peregrinus*	---	BCC, SGCN
Prairie falcon	*Falco mexicanus*	---	BCC
Mississippi kite	*Ictinia mississippiensis*	---	---
Grouse and Turkeys			
Gray partridge	*Perdix perdix*	---	---
Ring-necked pheasant	*Phasianus colchicus*	---	---
Ruffed grouse	*Bonasa umbellus*	---	---
Greater sage-grouse	*Centrocercus urophasianus*	---	SGCN
Sharp-tailed grouse	*Tympanuchus phasianellus*	X	---
Wild turkey	*Meleagris gallopavo*	X	---
Cranes and Rails			
Sandhill crane	*Antigone canadensis*	---	---
Virginia rail	*Rallus limicola*	---	SGCN
Yellow rail	*Coturnicops noveboracensis*	---	BCC
Sora	*Porzana carolina*	---	---
American coot	*Fulica americana*	X	---
Shorebirds, Gulls, and Terns			
Killdeer	*Charadrius vociferus*	X	---
Black-necked stilt	*Himantopus mexicanus*	---	---
American avocet	*Recurvirostra americana*	X	---
Black-bellied plover	*Pluvialis squatarola*	---	---
American golden-plover	*Pluvialis dominica*	---	---
Snowy plover	*Charadrius nivosus*	---	SGCN
Semipalmated plover	*Charadrius semipalmatus*	---	---
Piping plover	*Charadrius melodus*	---	---
Mountain plover	*Charadrius montanus*	---	BCC, SGCN
Upland sandpiper	*Bartramia longicauda*	X	BCC, SGCN
Whimbrel	*Numenius phaeopus*	---	---

PROPOSED KEYHOLE MINE PERMIT POTENTIAL[1] AND DOCUMENTED AVIAN SPECIES LIST (CONTINUED)

Common Name[2]	Scientific Name[2]	Recorded During Baseline Surveys[3]	Special Status Designation[4]
Shorebirds, Gulls, and Terns (Continued)			
Long-billed curlew	*Numenius americanus*	---	BCC, SGCN
Marbled godwit	*Limosa fedoa*	---	BCC
Ruddy turnstone	*Arenaria interpres*	---	---
Red knot	*Calidris canutus*	---	---
Stilt sandpiper	*Calidris himantopus*	---	---
Sanderling	*Calidris alba*	---	---
Baird's sandpiper	*Calidris bairdii*	---	---
Least sandpiper	*Calidris minutilla*	---	---
White-rumped sandpiper	*Calidris fuscicollis*	---	---
Pectoral sandpiper	*Calidris melanotos*	---	---
Semipalmated sandpiper	*Calidris pusilla*	---	---
Western sandpiper	*Calidris mauri*	---	---
Long-billed dowitcher	*Limnodromus scolopaceus*	---	---
Greater yellowlegs	*Tringa melanoleuca*	---	---
Lesser yellowlegs	*Tringa flavipes*	---	BCC
Solitary sandpiper	*Tringa solitaria*	---	---
Willet	*Tringa semipalmata*	X	---
Spotted sandpiper	*Actitis macularius*	X	---
Wilson's snipe	*Gallinago delicata*	---	---
Wilson's phalarope	*Phalaropus tricolor*	---	---
Red-necked phalarope	*Phalaropus lobatus*	---	---
Long-billed murrelet	*Brachyramphus perdix*	---	---
Sabine's gull	*Xema sabini*	---	---
Bonaparte's gull	*Chroicocephalus philadelphia*	---	---
Franklin's gull	*Leucophaeus pipixcan*	***	SGCN
Ring-billed gull	*Larus delawarensis*	X	---
California gull	*Larus californicus*	---	---
Herring gull	*Larus argentatus*	---	---
Lesser black-backed gull	*Larus fuscus*	---	---

PROPOSED KEYHOLE MINE PERMIT POTENTIAL[1] AND DOCUMENTED AVIAN SPECIES LIST (CONTINUED)

Common Name[2]	Scientific Name[2]	Recorded During Baseline Surveys[3]	Special Status Designation[4]
Shorebirds, Gulls, and Terns (Continued)			
Glaucous gull	*Larus hyperboreus*	---	---
Least tern	*Sternula antillarum*	---	---
Caspian tern	*Hydroprogne caspia*	---	SGCN
Black tern	*Chlidonias niger*	---	SGCN
Common tern	*Sterna hirundo*	---	---
Forster's tern	*Sterna forsteri*	---	SGCN
Pigeons and Doves			
Rock pigeon	*Columba livia*	---	---
Eurasian collared-dove	*Streptopelia decaocto*	---	---
Mourning dove	*Zenaida macroura*	X	---
Cuckoos			
Black-billed cuckoo	*Coccyzus erythropthalmus*	---	BCC, SGCN
Yellow-billed cuckoo	*Coccyzus americanus*	---	SGCN
Owls			
Barn owl	*Tyto alba*	---	---
Burrowing owl	*Athene cunicularia*	---	BCC, SGCN
Barred owl	*Strix varia*	---	---
Eastern screech owl	*Megascops asio*	---	---
Short-eared owl	*Asio flammeus*	---	BCC, SGCN
Long-eared owl	*Asio otus*	---	---
Great horned owl	*Bubo virginianus*	X	---
Snowy owl	*Bubo scandiacus*	---	---
Northern saw-whet owl	*Aegolius acadicus*	---	---
Goatsuckers			
Common nighthawk	*Chordeiles minor*	***	SGCN
Common poorwill	*Phalaenoptilus nuttallii*	---	---
Swifts			
White-throated swift	*Aeronautes saxatalis*	---	---

PROPOSED KEYHOLE MINE PERMIT POTENTIAL[1] AND DOCUMENTED AVIAN SPECIES LIST (CONTINUED)

Common Name[2]	Scientific Name[2]	Recorded During Baseline Surveys[3]	Special Status Designation[4]
Hummingbirds			
Broad-tailed hummingbird	*Selasphorus platycercus*	---	---
Calliope hummingbird	*Selasphorus calliope*	---	SGCN
Rufous hummingbird	*Selasphorus rufus*	---	SGCN
Kingfishers			
Belted kingfisher	*Megaceryle alcyon*	---	---
Woodpeckers			
Lewis' woodpecker	*Melanerpes lewis*	---	BCC, SGCN
Red-headed woodpecker	*Melanerpes erythrocephalus*	---	BCC, SGCN
Williamson's sapsucker	*Sphyrapicus thyroideus*	---	SGCN
Red-naped sapsucker	*Sphyrapicus nuchalis*	---	---
Yellow-bellied sapsucker	*Sphyrapicus varius*	---	---
Hairy woodpecker	*Picoides villosus*	X	---
Downy woodpecker	*Picoides pubescens*	---	---
Black-backed woodpecker	*Picoides arcticus*	---	SGCN
Northern flicker	*Colaptes auratus*	X	---
Flycatchers			
Olive-sided flycatcher	*Contopus cooperi*	---	---
Western wood-pewee	*Contopus sordidulus*	X	---
Willow flycatcher	*Empidonax traillii*	---	SGCN
Least flycatcher	*Empidonax minimus*	---	---
Dusky flycatcher	*Empidonax oberholseri*	---	---
Cordilleran flycatcher	*Empidonax occidentalis*	---	---
Eastern phoebe	*Sayornis phoebe*	---	---
Say's phoebe	*Sayornis saya*	---	---
Cassin's kingbird	*Tyrannus vociferans*	---	---
Western kingbird	*Tyrannus verticalis*	X	---
Eastern kingbird	*Tyrannus tyrannus*	X	---
Larks			
Horned lark	*Eremophila alpestris*	X	---

PROPOSED KEYHOLE MINE PERMIT POTENTIAL[1] AND DOCUMENTED AVIAN SPECIES LIST (CONTINUED)

Common Name[2]	Scientific Name[2]	Recorded During Baseline Surveys[3]	Special Status Designation[4]
Swallows			
Barn swallow	*Hirundo rustica*	---	---
Cliff swallow	*Petrochelidon pyrrhonota*	X	---
Tree swallow	*Tachycineta bicolor*	---	---
Violet-green swallow	*Tachycineta thalassina*	---	---
Northern rough-winged swallow	*Stelgidopteryx serripennis*	---	---
Bank swallow	*Riparia riparia*	---	---
Jays, Magpies, and Crows			
Gray jay	*Perisoreus canadensis*	---	---
Blue jay	*Cyanocitta cristata*	---	---
Pinyon jay	*Gymnorhinus cyanocephalus*	---	BCC
Steller's jay	*Cyanocitta stelleri*	---	---
Clark's nutcracker	*Nucifraga columbiana*	---	SGCN
Black-billed magpie	*Pica hudsonia*	X	---
American crow	*Corvus brachyrhynchos*	X	---
Common raven	*Corvus corax*	---	---
Chickadees			
Black-capped chickadee	*Poecile atricapillus*	X	---
Mountain chickadee	*Poecile gambeli*	---	---
Nuthatches			
Red-breasted nuthatch	*Sitta canadensis*	X	---
White-breasted nuthatch	*Sitta carolinensis*	---	---
Pygmy nuthatch	*Sitta pygmaea*	---	SGCN
Creepers			
Brown creeper	*Certhia americana*	---	---
Wrens			
Rock wren	*Salpinctes obsoletus*	---	---
Canyon wren	*Catherpes mexicanus*	---	SGCN
House wren	*Troglodytes aedon*	X	---

PROPOSED KEYHOLE MINE PERMIT POTENTIAL[1] AND DOCUMENTED AVIAN SPECIES LIST (CONTINUED)

Common Name[2]	Scientific Name[2]	Recorded During Baseline Surveys[3]	Special Status Designation[4]
Wrens (Continued)			
Pacific wren	*Troglodytes pacificus*	---	---
Gnatcatchers and Kinglets			
Blue-gray gnatcatcher	*Polioptila caerulea*	---	SGCN
Golden-crowned kinglet	*Regulus satrapa*	---	---
Ruby-crowned kinglet	*Regulus calendula*	---	---
Thrushes			
Eastern bluebird	*Sialia sialis*	---	---
Western bluebird	*Sialia mexicana*	---	---
Mountain bluebird	*Sialia currucoides*	X	---
Townsend's solitaire	*Myadestes townsendi*	---	---
Veery	*Catharus fuscescens*	---	---
Swainson's thrush	*Catharus ustulatus*	X	---
Hermit thrush	*Catharus guttatus*	---	---
American robin	*Turdus migratorius*	X	---
Varied thrush	*Ixoreus naevius*	---	---
Mockingbirds and Thrashers			
Gray catbird	*Dumetella carolinensis*	---	---
Sage thrasher	*Oreoscoptes montanus*	X	BCC, SGCN
Brown thrasher	*Toxostoma rufum*	---	---
Wagtails and Pipits			
American pipit	*Anthus rubescens*	---	SGCN
Sprague's pipit	*Anthus spragueii*	---	BCC
Waxwings			
Bohemian waxwing	*Bombycilla garrulous*	---	---
Cedar waxwing	*Bombycilla cedrorum*	X	---
Shrikes			
Northern shrike	*Lanius excubitor*	---	---
Loggerhead shrike	*Lanius ludovicianus*	X	BCC, SGCN

PROPOSED KEYHOLE MINE PERMIT POTENTIAL[1] AND DOCUMENTED AVIAN SPECIES LIST (CONTINUED)

Common Name[2]	Scientific Name[2]	Recorded During Baseline Surveys[3]	Special Status Designation[4]
Starlings			
European starling	*Sturnus vulgaris*	---	---
Vireos			
Plumbeous vireo	*Vireo plumbeus*	---	---
Warbling vireo	*Vireo gilvus*	---	---
Red-eyed vireo	*Vireo olivaceus*	---	SGCN
Warblers			
Tennessee warbler	*Oreothlypis peregrina*	---	---
Orange-crowned warbler	*Oreothlypis celata*	X	---
Nashville warbler	*Oreothlypis ruficapilla*	---	---
Yellow warbler	*Setophaga petechia*	X	---
Chestnut-sided warbler	*Setophaga pensylvanica*	---	---
Yellow-rumped warbler	*Setophaga coronata*	X	---
Townsend's warbler	*Setophaga townsendi*	---	---
Blackpoll warbler	*Setophaga striata*	---	---
Black-throated blue warbler	*Setophaga caerulescens*	---	---
Golden-winged warbler	*Vermivora chrysoptera*	---	---
Black-and-white warbler	*Mniotilta varia*	---	---
American redstart	*Setophaga ruticilla*	---	---
Magnolia warbler	*Setophaga magnolia*	---	---
Ovenbird	*Seiurus aurocapilla*	---	---
MacGillivray's warbler	*Geothylypis tolmiei*	---	SGCN
Kentucky warbler	*Geothlypis formosus*	---	---
Common yellowthroat	*Geothlypis trichas*	X	SGCN
Virginia's warbler	*Oreothlypis virginiae*	---	SGCN
Wilson's warbler	*Cardellina pusilla*	---	---
Yellow-breasted chat	*Icteria virens*	---	---
Tanagers			
Western tanager	*Piranga ludoviciana*	---	---

PROPOSED KEYHOLE MINE PERMIT POTENTIAL[1] AND DOCUMENTED AVIAN SPECIES LIST (CONTINUED)

Common Name[2]	Scientific Name[2]	Recorded During Baseline Surveys[3]	Special Status Designation[4]
Cardinals			
Northern cardinal	*Cardinalis cardinalis*	---	---
Grosbeaks and Buntings			
Rose-breasted grosbeak	*Pheucticus ludovicianus*	---	---
Black-headed grosbeak	*Pheucticus melanocephalus*	---	---
Blue grosbeak	*Passerina caerulea*	---	SGCN
Lazuli bunting	*Passerina amoena*	---	---
Indigo bunting	*Passerina cyanea*	---	---
Painted bunting	*Passerina ciris*	---	---
Dickcissel	*Spiza americana*	X	BCC, SGCN
Towhees, Sparrows, Juncos, and Longspurs			
Green-tailed towhee	*Pipilo chlorurus*	---	---
Spotted towhee	*Pipilo maculatus*	---	---
American tree sparrow	*Spizelloides arborea*	---	---
Brewer's sparrow	*Spizella breweri*	X	BCC, SGCN
Chipping sparrow	*Spizella passerina*	X	---
Clay-colored sparrow	*Spizella pallida*	---	---
Field sparrow	*Spizella pusilla*	X	---
Sagebrush sparrow	*Artemisiospiza nevadensis*	---	BCC, SGCN
Vesper sparrow	*Pooecetes gramineus*	X	---
Grasshopper sparrow	*Ammodramus savannarum*	X	BCC, SGCN
Baird's sparrow	*Ammodramus bairdii*	---	BCC, SGCN
Fox sparrow	*Passerella iliaca*	---	---
Harris's sparrow	*Zonotrichia querula*	---	---
Lark sparrow	*Chondestes grammacus*	X	---
Savannah sparrow	*Passerculus sandwichensis*	---	---
Song sparrow	*Melospiza melodia*	---	---
Lincoln's sparrow	*Melospiza lincolnii*	---	---
Swamp sparrow	*Melospiza georgiana*	---	---
White-crowned sparrow	*Zonotrichia leucophrys*	---	---

PROPOSED KEYHOLE MINE PERMIT POTENTIAL[1] AND DOCUMENTED AVIAN SPECIES LIST (CONTINUED)

Common Name[2]	Scientific Name[2]	Recorded During Baseline Surveys[3]	Special Status Designation[4]
Towhees, Sparrows, Juncos, and Longspurs (Continued)			
White-throated sparrow	*Zonotrichia albicollis*	---	---
Dark-eyed junco	*Junco hyemalis*	X	---
Lark bunting	*Calamospiza melanocorys*	X	---
Snow bunting	*Plectrophenax nivalis*	---	---
Lapland longspur	*Calcarius lapponicus*	---	---
Chestnut-collared longspur	*Calcarius ornatus*	---	BCC, SGCN
Smith's longspur	*Calcarius pictus*	---	---
McCown's longspur	*Rhynchophanes mccownii*	---	BCC, SGCN
Blackbirds, Meadowlarks, and Orioles			
Bobolink	*Dolichonyx oryzivorus*	---	SGCN
Red-winged blackbird	*Agelaius phoeniceus*	X	---
Western meadowlark	*Sturnella neglecta*	X	---
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*	---	---
Rusty blackbird	*Euphagus carolinus*	---	---
Brewer's blackbird	*Euphagus cyanocephalus*	X	---
Common grackle	*Quiscalus quiscula*	---	---
Great-tailed grackle	*Quiscalus mexicanus*	---	---
Brown-headed cowbird	*Molothrus ater*	X	---
Orchard oriole	*Icterus spurius*	---	---
Bullock's oriole	*Icterus bullockii*	---	---
Baltimore oriole	*Icterus galbula*	---	---
Finches			
Gray-crowned rosy-finch	*Leucosticte tephrocotis*	---	---
Black-rosy finch	*Leucosticte atrata*	---	SGCN
Pine grosbeak	*Pinicola enucleator*	---	---
House finch	*Haemorhous mexicanus*	---	---
Purple finch	*Carpodacus purpureus*	---	---
Cassin's finch	*Haemorhous cassinii*	---	---
Red crossbill	*Loxia curvirostra*	---	SGCN

PROPOSED KEYHOLE MINE PERMIT POTENTIAL[1] AND DOCUMENTED AVIAN SPECIES LIST (CONTINUED)

Common Name[2]	Scientific Name[2]	Recorded During Baseline Surveys[3]	Special Status Designation[4]
Finches			
Common redpoll	*Acanthis flammea*	---	---
Hoary redpoll	*Acanthis hornemanni*	---	---
Pine siskin	*Spinus pinus*	---	---
American goldfinch	*Spinus tristis*	X	---
Evening grosbeak	*Coccothraustes vespertinus*	---	---
Weaver Finches			
House sparrow	*Passer domesticus*	---	---

PROPOSED KEYHOLE MINE PERMIT POTENTIAL[1] AND DOCUMENTED REPTILE AND AMPHIBIAN SPECIES LIST

Common Name[2]	Scientific Name[2]	Recorded During Baseline Surveys[3]	Special Status Designation[4]
Salamanders			
Tiger salamander	*Ambystoma mavortium*	---	SGCN
Frogs and Toads			
Great plains toad	*Anaxyrus cognatus*	---	SGCN
Northern leopard frog	*Lithobates pipiens*	X	SGCN
Boreal chorus frog	*Pseudacris maculata*	---	---
Woodhouse's toad	*Anaxyrus wodhousii*	---	---
Lizards			
Greater short-horned lizard	*Phrynosoma hernandesi*	---	SGCN
Snakes			
Eastern yellow-bellied racer	*Coluber constrictor flaviventris*	---	---
Smooth greensnake	*Opheodrys vernalis*	---	SGCN
Black Hills red-bellied snake	*Storeria occipitomaculata pahasapae*	---	SGCN
Bullsnake	*Pituophis catenifera sayi*	X	---
Wandering gartersnake	*Thamnophis elegans vagrans*	---	---
Red-sided gartersnake	*Thamnophis sirtalis parietalis*	---	SGCN

PROPOSED KEYHOLE MINE PERMIT POTENTIAL[1] AND DOCUMENTED REPTILE AND AMPHIBIAN SPECIES LIST (CONTINUED)

Common Name[2]	Scientific Name[2]	Recorded During Baseline Surveys[3]	Special Status Designation[4]
Snakes			
Plains gartersnake	*Thamnophis radix*	---	SGCN
Prairie rattlesnake	*Crotalus viridis*	---	SGCN
Turtles			
Eastern spiny softshell	*Apalone spinifera spinifera*	---	SGCN
Western painted turtle	*Chrysemys picta bellii*	---	SGCN
Snapping turtle	*Chelydra serpentina*	---	---

PROPOSED KEYHOLE MINE PERMIT POTENTIAL[1] AND DOCUMENTED FISH SPECIES LIST

Common Name[2]	Scientific Name[2]	Recorded During Baseline Surveys[3]	Special Status Designation[4]
Trout			
Brook trout	*Salvelinus fontinalis*	---	---
Brown trout	*Salmo trutta*	---	---
Golden trout	*Oncorhynchus aguabonita*	---	---
Kokanee	*Oncorhynchus nerka*	---	---
Lake trout	*Salvelinus namaycush*	---	---
Ohrid trout	*Salmo ietnica*	---	---
Rainbow trout	*Oncorhynchus mykiss*	---	---
Suckers			
Longnose sucker	*Catostomus catostomus*	---	---
Mountain sucker	*Catostomus platyrhynchus*	---	---
Quillback	*Carpiodes cyprinus*	---	---
River carpsucker	*Carpiodes carpio*	---	---
Shorthead redhorse	*Moxostoma macrolepidotum*	---	---
Utah sucker	*Catostomus ardens*	---	---
White sucker	*Catostomus commersoni*	---	---
Bullheads/Catfish			
Black bullhead	*Ameiurus melas*	---	---
Channel catfish	*Ictalurus punctatus*	---	---