ATTACHMENT D9-A.9-2.

Aquatic Macroinvertebrate Monitoring for Rare Element Resources Inc.'s Proposed Bull Hill Mine Black Hills National Forest

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INTRODUCTION

This report presents the 2018 survey results for aquatic macroinvertebrate monitoring along Beaver Creek (Township 52 North [T52N], Range 63 West [R63W]) for the Rare Element Resource's Proposed Bull Hill Mine in Crook County, Wyoming. The original baseline surveys were conducted in 2012 and 2013, with an additional year of volunteer sampling in 2014. The 2018 effort represents a second year of volunteer sampling to maintain a record of the current aquatic conditions prior to submitting for authorization to mine with the Wyoming Department of Environmental Quality (WDEQ).

The current sampling results describe the physical and biological characteristics of Beaver Creek in July 2018. The data gathered includes the physical and biological conditions at the time of the macroinvertebrate sampling. All of the past data collected for the Bull Hill Project are intended to supplement the existing studies for the area (i.e., historical monitoring along Whitelaw Creek by WDEQ [1992]), and only reports stream conditions on the dates sampling occurred, with the assumption that physical and biological parameters fluctuate frequently at these sampling sites.

Due to the dry conditions in 2012, only two sites were established and sampled within the Bull Hill Mine proposed permit area on August 28, 2012. In 2013, at the request of the Wyoming Game and Fish Department and the U.S Forest Service, a third site was added. Aquatic macroinvertebrate samples as well as the physical parameters of wetted top width, water depth, water velocity and temperature were taken at all established sites each year (two in 2012, and three in 2013, 2014, and 2018). Areas along Beaver Creek within the permit area and upstream from the sample sites were dry during most of late spring/summer in 2012 and 2013. Stream flow was more pronounced and persistent in 2014 and 2018. As mentioned above, WDEQ also has had a monitoring site within the permit area along Whitelaw Creek, which contained more consistent flow throughout 2012 and 2013. Currently, it is not known if the WDEQ still monitors Whitelaw Creek.

STUDY AREA and METHODS

Aquatic macroinvertebates samples were collected and physical parameters measured at two sites on Beaver Creek, within T52N:R63W in the Black Hills National Forest in 2012, and three sites in 2013, 2014, and 2018. Site A is located approximately 440 meters downstream and Site B is located approximately 245 meters upstream of the confluence of Beaver and Whitelaw creeks. Site C was established in 2013 and is located approximately 2.6 miles

downstream of Site A. Beaver Creek is a 2nd order stream at Sites A and C, but is a 1st order stream at Site B. These sites are depicted as perennial on the U.S. Geological (USGS) 7.5-minute Survey Topographic Map.

On August 28, 2012, the physical and biological parameters on Beaver Creek were sampled at Sites A and B. In 2013, Sites A and B were sampled on July 5, and Site C was sampled on July 8. Sites A, B, and C were sampled on July 2, 2014, and again on July 13, 2018. Otherwise, all sampling methods were consistent between year and conducted in accordance with WDEQ standards.

Physical Parameters

Physical characteristics measured at each sampling site included: 1) mean water depth; 2) mean wetted top width; 3) mean water velocity; and 4) water temperature. Mean water depth and top width were measured directly using a meter stick and 100-meter tape, respectively. Mean water velocity was measured using the time-of-travel float method with a neutrally buoyant object. Water temperature was measured with a hand-held pocket thermometer.

A WDEQ Stream Substrate and Embeddedness Rating was also determined for each site in 2013, 2014, and 2018.

Biological

Three aquatic macroinvertebrates samples were collected at each site each year using a 1-foot square Surber sampler. Samples were preserved in the field in 70% isopropyl alcohol. In the laboratory, each sample was sorted under a dissection microscope. All organisms were counted and identified to the lowest taxonomic level possible. A Shannon-Weiner Diversity Index H' (log base 10) was calculated at the taxonomic Family level.

RESULTS

Physical Parameters

Comparisons across years can be made back to 2012 for Sites A and B, but not for Site C because sampling wasn't initiated at this site until 2013. The physical water parameters identified for Sites A-C between 2012 and 2018 are shown in Table 1. The stream channel embeddedness rating for each site between 2012 and 2018 is listed along with the WDEQ Rating Scale in Table 2.

Table 1. Average Physical Water Parameters Identified at Sites A-C along Beaver Creek for the Proposed Bull Hill Project.

Site	Year	Water Depth	Top Wetted Width	Water Velocity	Temperature
A	2012	27.1 cm	156 cm	0.18 mps	22.5°C
	2013	21.7 cm	310 cm	0.27 mps	20.0°C
	2014	26.4 cm	920 cm	0.23 mps	10.0°C
	2018	16.1 cm	230 cm	0.67 mps	26.0°C
B	2012	13.5 cm	126 cm	No flow	22.0°C
	2013	16.7 cm	150 cm	0.16 mps	21.5°C
	2014	28.7 cm	140 cm	0.13 mps	17.0°C
	2018	16.7 cm	148 cm	0.82 mps	21.0°C
C	2012	---	---	---	---
	2013	21.7 cm	230 cm	0.23 mps	17.5°C
	2014	22.7 cm	370 cm	0.13 mps	14.5°C
	2018	15.2 cm	180 cm	0.77 mps	18.0°C

Table 2. The Stream Channel Embeddedness Rating* for Sites A-C along Beaver Creek for the Proposed Bull Hill Project.

Site	2013	2014	2018
A	3 (27.9%)	3 (28.8%)	3 (25.9%)
B	4 (16.5%)	4 (17.2%)	4 (15.1%)
C	4 (19.5%)	3 (35.0%)	4 (19.5%)

* Embeddedness Rating	Definition
5	< 5% Surfaced Covered or Surrounded by Silt
4	5% – 25% Surface Covered or Surrounded by Silt
3	25% – 50% Surface Covered or Surrounded by Silt
2	50% – 75% Surface Covered or Surrounded by Silt
1	>75% Surface Covered or Surrounded by Silt

Biological

Benthic Macroinvertebrates – Table 3 presents results from the aquatic macroinvertebrate sampling from Sites A-C between 2012 and 2018. A comparison across all sampling years of the Shannon-Weiner Diversity Index H' at each site is also provided in Table 4. The macroinvertebrate diversity is poorly represented in all samples, with the H' value low at all sites in 2012, 2013, 2014, and 2018.

Table 3. Macroinvertebrate sampling density (#/ft^2, n = 3) at Sites A-C along Beaver Creek for the Proposed Bull Hill Project.

Taxa	Year	Site A	Site B	Site C
Phylum Annelida	2012	0	1	---
Class Hirudinea	2013	0	0	0
Order Rhynchobdellida	2014	4	0	1
Family Glossiphoniidae	2018	6	0	2
Phylum Arthropoda	2012	3	58	---
Class Crustacea	2013	0	0	0
Order Amphipoda	2014	2	0	0
Family Talitridae	2018	6	4	0
Hyalella azteca				
Class Insecta	2012	14	5	---
Order Coleoptera	2013	0	0	0
Family Elmidae	2014	0	5	0
Heterlimnius corpulentus	2018	13	0	0
Class Insecta	2012	0	1	---
Order Coleoptera	2013	11	3	0
Family Dytiscidae	2014	9	4	1
Genus Hydaticus	2018	0	1	7
Class Insecta	2012	0	1	---
Order Coleoptera	2013	0	0	0
Family Haliplidae	2014	0	0	0
	2018	0	0	0
Class Insecta	2012	1	0	---
Order Coleoptera	2013	2	0	0
Family Hydrophilidae	2014	0	0	0
Genus Tropisternus	2018	0	0	0
Class Insecta	2012	0	0	---
Order Diptera	2013	0	0	0
Family Ceratopogonidae	2014	0	0	1
	2018	1	0	0
Class Insecta	2012	3	6	---
Order Diptera	2013	9	11	24
Family Chironomidae	2014	47	15	7
Subfamily Orthocladiinae	2018	4	1	74
Class Insecta	2012	0	0	---
Order Diptera	2013	0	0	1
Family Chironomidae	2014	4	5	23
Subfamily Tanypodinae	2018	0	0	0
Class Insecta	2012	1	0	---
Order Diptera	2013	0	1	1
Family Dixida	2014	0	1	0
Genus Dixa	2018	0	1	1

Table 3. Continued.

Taxa	Year	Site A	Site B	Site C
(Phylum Arthropoda continued) Class Insecta Order Diptera Family Empididae Genus Euparyphus	2012	1	0	---
	2013	0	0	0
	2014	0	0	0
	2018	0	0	0
Class Insecta Order Diptera Family Psychodidae Genus Pericoma	2012	0	0	---
	2013	0	0	0
	2014	0	1	0
	2018	0	0	0
Class Insecta Order Diptera Family Simuliidae Genus Simulium	2012	1	0	---
	2013	12	27	3
	2014	2	28	170
	2018	1	2	0
Class Insecta Order Diptera Family Tipulidae Genus Hexatoma	2012	0	0	---
	2013	0	0	0
	2014	4	0	3
	2018	0	0	0
Class Insecta Order Diptera Family Tipulidae Genus Tipula	2012	1	0	---
	2013	0	0	0
	2014	0	0	3
	2018	1	0	5
Class Insecta Order Ephemeroptera Family Baetidae Genus Baetis	2012	11	9	---
	2013	6	6	5
	2014	12	4	21
	2018	8	8	4
Class Insecta Order Ephemeroptera Family Heptageniidae Genus Epeorus	2012	0	0	---
	2013	0	0	0
	2014	0	1	1
	2018	0	0	0
Class Insecta Order Ephemeroptera Family Leptophlebiidae Genus Paraleptophlebia	2012	1	52	---
	2013	9	1	0
	2014	98	5	0
	2018	6	0	0
Class Insecta Order Hemiptera Family Gerridae Genus Aquarius	2012	0	0	---
	2013	0	0	0
	2014	0	1	0
	2018	0	0	0
Class Insecta Order Hemiptera Family Macroveliidae Genus Oravelia	2012	0	3	---
	2013	0	0	0
	2014	0	0	0
	2018	0	1	0

Table 3. Continued.

Taxa	Year	Site A	Site B	Site C
(Phylum Arthropoda continued)	2012	0	5	---
Class Insecta	2013	0	0	0
Order Hemiptera	2014	0	0	0
Family Notonectidae	2018	0	0	0
Genus Buenoa				
Class Insecta	2012	0	1	---
Order Odonata	2013	0	0	0
Family Gomphidae	2014	0	0	0
Genus Ophiogomphus	2018	1	1	0
Class Insecta	2012	0	0	0
Order Plecoptera	2013	0	1	1
Family Chloroperlidae	2014	8	0	0
Genus Alloperla	2018	0	0	0
Class Insecta	2012	0	0	0
Order Plecoptera	2013	2	0	0
Family Pteronarcyidae	2014	4	0	0
Genus Pteronarcella	2018	2	0	0
Class Insecta	2012	0	0	0
Order Trichoptera	2013	5	7	0
Family Brachycentridae	2014	9	0	1
Genus Bracycentrus	2018	10	0	0
Class Insecta	2012	3	23	---
Order Trichoptera	2013	0	0	0
Family Helicopsychidae	2014	3	0	0
Helicopsyche borealis	2018	1	0	0
Class Insecta	2012	4	0	---
Order Trichoptera	2013	12	1	0
Family Hydropsychidae	2014	19	9	1
Genus Hydropsyche	2018	2	0	0
Class Insecta	2012	0	1	---
Order Trichoptera	2013	0	0	0
Family Leptoceridae	2014	0	0	0
Genus Oecetis	2018	0	0	0
Class Insecta	2012	0	0	---
Order Trichoptera	2013	3	3	0
Family Limniphilidae	2014	2	2	1
Genus Hesperophylax	2018	3	6	3
Class Insecta	2012	0	0	---
Order Trichoptera	2013	6	3	0
Family Rhyacophilidae	2014	0	0	0
Genus Rhyacophila	2018	0	0	0

Table 3. Continued.

Taxa	Year	Site A	Site B	Site C
Phylum Mollusca	2012	0	7	---
Class Gastropoda	2013	0	1	0
Order Basmmatophora	2014	2	1	0
Family Physidae	2018	0	0	1
	2012	0	2	---
Class Bivalvia	2013	0	0	0
Order Heterodonta	2014	0	0	0
Family Sphaeridae	2018	0	0	0
Total Individuals Collected	2012	**44**	**175**	**---**
	2013	**103**	**84**	**38**
	2014	**238**	**82**	**234**
	2018	**65**	**25**	**97**

Table 4. A Comparison of Shannon-Weiner Diversity Index H' (log base 10) at Sites A-C along Beaver Creek for the Proposed Bull Hill Project.

Year	Site A	Site B	Site C
2012	0.87	0.81	---
2013	0.98	0.86	0.51
2014	0.84	0.91	0.45
2018	1.03	0.80	0.21

DISCUSSION

Physical Parameters

Despite variability in the hydrological conditions (e.g., top wetted width, water depth, velocity and temperature), which are expected when comparing between years, Beaver Creek has not changed substantially from 2012 to 2018. The one exception is Site C, where the original channel (2013 and 2014) had been abandoned for a new meandering channel slightly to the east and the substrate was heavily covered by algae in 2018. Consequently, this site was relocated approximately 40 meters downstream to reach water.

The Wyoming DEQ Embeddedness Rating for Site A has consistently been calculated as 3, with Sites B and C predominantly rated as 4 (except in 2014 at Site C when it was also rated 3). On a scale of 5 to 1, with a rating of 5 being consider 'Excellent' and 1 being 'Poor', the recorded site ratings are very good. Ward (1975), Minshall (1984), Stewart and Stark (1988), and DeBrey and

Lockwood (1989) showed a progressive increase in stream insect abundance from a sand to rubble substrate (i.e., with a higher embeddedness ranking). Given the embeddedness ratings of 3 to 4, Beaver Creek has the potential to sustain a large and diverse population of aquatic insects.

Biological

Instar: The growth stage between two successive molts. Egg to 1st instar, 2nd instar, etc.

Emergence: The time that the adult insect leaves a body of water to breed (largely temperature dependent).

Except for the stonefly (Perlodid), the two dragonflies (Gomphidae), and the caddisfly (Limnephilids), all insects were of 1st or 2nd instar. Genus was based on past collections.

Drift: Waters (1965) divided insect drift into three categories (1) catastrophic drift, which results from disturbance (e.g. floods) of the benthos; (2) constant drift, which is the continual drift of low numbers of most species of aquatic insects; and (3) behavioral drift which is indicated by characteristic patterns of behavior resulting in a predictable diel periodicity.

Adaptations of Stream Insects: Stream insects have made several adaptations for living in flowing waters (streamlining, pads, claws and hooks etc). For example, if an insect is small enough, it is able to avoid the current or live in the crevices of rocks without being flattened. Elmid beetles (i.e. *Heterolimnius corpulentus*) often the only beetles of mountain streams, are much smaller than other beetles that occur in slower lotic systems (Ward et. al. 2002). Many stream insects, such as stoneflies, have well developed claws and hooks that allow them to maintain position in strong current (Stewart and Stark. 1988). Simullidae (black fly) larvae have prolegs and a circlet of hooks on the flattened apex of the abdomen for attachment (Alder and Currie. 2008). The caddisfly genus *Rhyacophila* uses hooked prolegs to cling to the substrate (Wiggins 1996, Ward et. al. 2002). Many of the other families of caddisflies use silk for attachment to substrate (Wiggins 1996).

Beaver Creek: A comparison of the aquatic macroinvertebrates between 2012 and 2018 shows that, while aquatic snails and mussels and *Helicopsyche borealis* (a small caddisfly which builds its case from sand) were abundant in 2012, they were absent at all sites in the 2013 samples and only one to three H. borealis were found at Site A in 2014 and 2018. With flows of 500 cfs (cubic feet per second) in Beaver Creek and approximately 1400 cfs in Whitelaw Creek

in 2013 from mid to late May (personal communications with ICF International), the absence of these fresh water invertebrates and insects would be due to scour (the erosive power of suspended sediments, Hynes 1970) and catastrophic drift. Early season flows were not known in 2018.

The presence of the beetle *Heterolimnius Corpulentus*, stoneflies, caddisflies, and black flies has been previously discussed. The non-biting midges (Diptera: Chironomidae) are the most widespread of all aquatic insect families (Ferrington et. al. 2008), and are typically abundant at Sites A, B, and C in most years.

There were no scuds collected in 2013 and few in 2014 and 2018. But *Hyallela azteca* react negatively to light and consequentially, are hidden in the vegetation during the daytime. Sampling within the stream center, rather than along the banks, may lead to the restricted numbers of this species.

Compared to previous years' sampling, no new aquatic insects were collected in 2018.

Colonization on substrate by aquatic insects is basically achieved by drift and fly up. Drift is the downstream movement by (mostly) larval insects using stream flow. Drift is an important mechanism for downstream dispersal and the recolonization of stream reaches where the populations of stream insects have been denuded by disturbance (Merritt et. al. 2008). Fly up is what many adult stream insects exhibit as a propensity to fly in the upstream direction to deposit eggs, thus compensating for the downstream displacement of aquatic stages by the current (Muller, 1982).

In the summer months Beaver Creek is often dry upstream from Site B, which limits this site to recolonization by either fly up or drift during periods of lower flows (early runoff). Conversely, Site A could be recolonized by either drift or fly up. However, given the volume of water in Whitelaw Creek during runoff, the population of insects in Whitelaw Creek was also adversely affected in the spring of 2013 and likely limited the potential for recolonization of Site A by Whitelaw Creek. Given this scenario, Site C should have the greater diversity and population numbers than Sites A and B. However, biologists have reported in the past many brook trout (*Salvelinus fontinalis*) fry utilizing this site, which may have influenced the diversity and abundance there. Algae growth greatly influenced H' at Site C with chironomids greatly outnumbering other taxa. Algae can be utilized by chironomids but not by other aquatic insects.

Conclusion

The aquatic insect population in Beaver Creek is limited in diversity and density by high springtime water runoff, frequent dry summer conditions upsteam, and (at least for Site C) predation by brook trout and or algae growth. Conversely, it's unlikely that oxygen levels are a factor in limiting diversity and abundance. Other factors that are known to be detrimental to aquatic macroinvertebrate populations include substrate composition and chemical conditions. The low abundance of aquatic insects in 2018 could be due to emergence by most aquatic insects before collection. This is supported by the high number of 1st instar insects collected.

It is recommended that Site C be moved upstream above the algae growth. Also, it is recommended that a site be added in Whitelaw Creek. A collection taken in October 2018 would likely show an increase in abundance and diversity.

REFERENCES

Alder, P.H. and D.C. Currie. 2008. In Merritt R.W., Cummins, K.W., and M.B. Berg (2008). An Introduction to the Aquatic Insects of North America, 4th Ed. Simuliidae pg 825 – 841.

DeBrey L. D. 2012. Aquatic macroinvertebrate baseline monitoring for Rare Element Resources Inc's proposed Bull Hill Mine, Black Hills National Forest. Report submitted to ICF International, Gillette, Wyoming.

DeBrey, L.D. Lockwood, J.A. (1990). Effects of sediment and flow regime on the aquatic insects of a high mountain stream. Regul. Rivers: Res. Mgmt., 5: 241-250.

Ferrington, L.C., Berg, M.B. and W.P. Coffman. 2008. In Merritt R.W., Cummins, K.W., and M.B. Berg (2008). An Introduction to the Aquatic Insects of North America, 4th Ed. Chironomidae pg 847 – 989.

Hynes, H.B.N.(1970). The Ecology of Running Waters. University of Toronto Press, Toronto, 555 pp.

ICF International, Gillette, Wyoming. 2013

Merritt R.W., Cummins, K.W., and M.B. Berg (2008). An Introduction to the Aquatic Insects of North America, 4th Ed. Kendall/Hunt Publishing Company, 1158 pp.

Muller, K. 1982. The colonization cycle of freshwater insects. Oecologia 52: 202 – 207.

Minshall, G.W. (1984). Aquatic insect substratum-substratum relationships. In Resh, V.H and Rosenberg, D.M. (Eds), The Ecology of Aquatic Insects. Praeger, New York, 358-400.

Pennack, R.W. (1989). Fresh Water Inverebrates of the United States, 3rd Ed. Protozoa to Mollusca. John Wiley and Sons, Inc. 628 pp.

Stewart, K.W. and B.P. Stark. 1988. Nymphs of North America Stonefly Genera (Plecoptera). Entomological Society of America.

Ward, J.V. (1975). Bottom fauna-substrate relationships in a northern Colorado trout stream: 1945 and 1974. Ecology., 56: 1429-1434.

Ward, J.V., Kondratieff, B.C. and Zuellig R.E. (2002). An Illustrated Guide to the Mountain Stream Insects of Colorado. University Press of Colorado. 217 pp.

Waters, T.F. 1965. Interpretation of invertebrate drift in streams. Ecology 46:327 – 334.

Wiggins, G.B. (1996). Larvae of the North American Caddisfly Genera (Trichoptera). 2nd Ed. University of Toronto Press, Toronto. 457 pp.

Wyoming Dept. of Environmental Quality. (1992). Reference Stream – Bioassessment Field Data Sheets. Whitelaw Creek, Wyoming.

ADDENDUM D9-B

Rare Element Resources, Inc.
2018 Update of the 2012/2013 Wildlife Baseline
Bear Lodge Project – Upton Plant Site

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November 16, 2018

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ACRONYMS AND ABBREVIATIONS

BCC	birds of conservation concern (USFWS)
BCR	Bird Conservation Region (USFWS)
Bear Lodge Project	Bull Hill Mine and associated infrastructure and the Upton Plant Site
BGEPA	Bald and Golden Eagle Protection Act
BLM	Bureau of Land Management
ESA	Endangered Species Act
FR	Federal Register
GPS	global positioning system
herptile	reptiles and amphibians
IPaC	Information Planning and Conservation System (USFWS)
lagomorph	rabbits and hares
MBTA	Migratory Bird Treaty Act
PWR	Precision Wildlife Resources, LLC
RER	Rare Element Resources, Inc.
sage-grouse	greater sage-grouse
SGCN	Species of Greatest Conservation Need (WGFD)
SWAP	State Wildlife Action Plan (WGFD)
T&E	Threatened and Endangered (USFWS)
TBNG	Thunder Basin National Grassland (USFS)
TEPS	Threatened, Endangered, Proposed and Sensitive Species (USFS)
Upton Plant Site survey area	proposed Upton Plant Site permit area and surrounding 2.0-mile perimeter
USFS	U.S. Forest Service
USFWS	U.S. Fish and Wildlife Service
UTM	Universal Transverse Mercator
WDEQ–LQD	Wyoming Department of Environmental Quality-Land Quality Division
WGFD	Wyoming Game and Fish Department

D9-B.1 INTRODUCTION

Precision Wildlife Resources, LLC (PWR) was contracted by Rare Element Resources, Inc. (RER) in April 2018 to supplement the original 2012 and 2013 wildlife baseline investigations and update the Wildlife Baseline Report for the Bear Lodge Project, Upton Plant Site. Additional wildlife surveys were also completed in 2014 and 2015, and all previous survey results from 2014 through 2018 are presented below; no surveys were conducted in 2016 and 2017. The proposed Bear Lodge Project consists of the Bull Hill Mine and Miller Creek Access Route (see Addendum D9-A), and the Upton Plant Site. The proposed Upton Plant Site permit area (Figure D9-B.8-1) includes approximately 831.85 acres in all or portions of:

- S ½ Section 28, T48N, R65W;
- SE ¼ Section 29, T48N, R65W;
- NE ¼ NE ¼ Section 32, T48N, R65W; and
- Section 33, T48N, R65W.

This update was completed as part of the continued Wyoming Department of Environmental Quality-Land Quality Division (WDEQ-LQD) Mine Permit Application in order to present the current status of vertebrate wildlife species occurrence, abundance, diversity, and general habitat affinity within the Upton Plant Site permit area and extended survey area.

D9-B.2 SURVEY AREA

In all years, the Upton Plant Site permit area and a surrounding 2.0-mile perimeter was utilized as the wildlife survey area, per the WDEQ-LQD Guideline No. 5 (1994) recommendations. The proposed Upton Plant permit area and wildlife survey area are illustrated in Figure D9-B-1. The permit area and wildlife survey area are both described in greater detail in Addendum D9-2 (Section D9-2.2).

Detailed information on the regional climate and average annual weather conditions for the project area are provided in Addendum D4-2. The weather conditions at the Upton Plant Site survey area have varied considerably over time. Conditions during much of the original baseline period were hot and dry, with limited precipitation events or surface water. By early spring 2014 and throughout 2015, more moderate conditions were prevalent, with temperatures and precipitation totals closer to the annual long-term average. Aquatic habitats were available throughout the wetter seasons but more limited in the drier times of each year. In 2018, persistent cold winter temperatures lasted well into the spring and heavy frequent precipitation events were recorded

throughout the summer. Consequently, drainages and impoundments were filled (or overflowing in some cases) nearly all year long.

D9-B.3 METHODS

All wildlife surveys at the Upton Plant Site in 2014, 2015, and 2018 followed standard survey requirements and protocols used and previously approved by the U.S. Fish and Wildlife Service (USFWS), U.S. Forest Service (USFS), Wyoming Game and Fish Department (WGFD), and WDEQ for the original baseline investigations. 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. Guidance was regularly obtained from managers and biological specialists with all relevant federal and state agencies in each year of additional monitoring. Since voluntary wildlife surveys were suspended in 2016 and 2017, notice of the proposed 2018 wildlife surveys was again provided by RER to the USFS and WDEQ-LQD for their approval prior to the initiation of the 2018 work.

All wildlife monitoring efforts were conducted in the Upton Plant Site survey area by qualified biologists. The role of supervising wildlife biologist was fulfilled by W. Vetter throughout the original baseline period (2012 and 2013) and subsequent years of monitoring (2014, 2015, and 2018). His qualifications are detailed in Addendum D9-2 (Section D9-2.3). Related experience of other staff involved in surveys during the additional years of monitoring after the baseline surveys ranged from 4 to 12 years.

Similar to the original wildlife baseline effort, all incidental animal species (including any federally listed species and other species of concern) within the Upton Plant Site survey area were recorded during each subsequent year's surveys. Standard field guides and references (Burt and Grossenheider 1976, Baxter and Stone 1980, Jones et al. 1983, Clark and Stromberg 1987, Peterson 1990, Baxter and Stone 1995, Stokes and Stokes 1996, and Sibley 2000, Lewis 2011) were used to identify animals and their sign. In combination with the previous wildlife investigations, an updated potential and documented species list for the Upton Plant Site survey area is provided as Attachment D9-B.9-1. 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.

D9-B.3.1 Wildlife Habitat Assessment

Wildlife habitats within the Upton Plant Site permit area and a 1.0-mile perimeter were reassessed in 2018 by PWR biologists in the field for the presence of any unusual or high-value wildlife habitats and/or features that could support USFWS Threatened and Endangered (T&E) species. As with the previous assessment in 2012 and 2013, the nomenclature to describe those habitats was chosen to generally correspond with the terminology used in the separate baseline and updated vegetation assessments (see Addenda D8-2 and D8-2-G). For the purposes of this update, general characteristics of each major habitat type were assessed only as they apply to wildlife use and/or value. Further detail regarding specific botanical information is summarized in Addenda D8-2 and D8-2-G.

D9-B.3.2 Upland Game Birds

In recent years, the greater sage-grouse (*Centrocercus urophasianus*) (hereafter, sage-grouse) was a candidate species for listing under the Endangered Species Act (ESA). However, on October 2, 2015, the USFWS issued a determination that this species was not warranted for listing and would no longer be designated as a candidate species (80 Federal Register [FR] 59858). The USFWS also indicated in their 2015 decision that another status review will be conducted for the species in 5 years (2020), but at this time the sage-grouse receives no special protection at the Federal level and will continue to be managed throughout its range at the State level (e.g., by the WGFD).

Prior to the 2015 USFWS decision and after reevaluating and amending previously designated sage-grouse protection areas, the State of Wyoming issued Executive Order No. 2015-4 (2015) (replacing Executive Order No. 2011-5 and 2013-3) to continue implementation of the sage-grouse core population and connectivity area policy. The most recent Executive Order designates sage-grouse core population area in the vicinity of the Upton Plant Site, but the proposed permit area remains outside of any defined sage-grouse core population areas or connectivity corridors (WGFD 2015). Essentially half of the surrounding wildlife survey area (extending from the northwestern to the southeastern margins of the survey area and along the western and southern borders of the proposed Upton Plant Site permit area) is currently included in the 'Thunder Basin' sage-grouse core area (Figure D9-B.8-1). Additional descriptions of the available habitats within the wildlife survey area that could support sage-grouse and other upland game bird species are provided in Addendum D9-2 (Sections D9-2.4.1 and D9-2.4.3).

According to WGFD data (2018), one 'occupied' sage-grouse lek (Stellwagon) and one 'undetermined' lek (Upton 3) exist within the Upton Plant Site wildlife

survey area. An occupied lek is defined as a lek that has been active during at least one strutting season within the prior 10 years, and an undetermined lek is any lek that has not been documented active in the last 10 years and insufficient survey information to designate it as unoccupied (WGFD 2012a). The Stellwagon lek is in SE ¼ NE ¼ Section 7, T47N, R65W, approximately 1.9 miles southwest of the permit area, and the Upton 3 lek is in NE ¼ SW ¼ Section 4, T47N, R65W, approximately 0.7 mile south of the permit area (Figure D9-B.8-1). One additional occupied lek (McCrady in SE ¼ SW ¼ Section 25, T48N, R66W) is less than 0.1 mile west of the wildlife survey area (Figure D9-B.8-1). Due to its general proximity, RER has voluntarily monitored the attendance at this lek as well. No sharp-tailed grouse (*Tympanuchus phasianellus*) leks or other upland game bird display sites are known to occur within the Upton Plant Site wildlife survey area.

The Upton 3 lek was monitored in both spring 2012 and 2013 as part of the original wildlife baseline effort, but the Stellwagon lek was not discovered until more recently (confirmed in 2015). The McCrady lek was discovered in 2013 during the original baseline surveys for the Upton Plant Site and then monitored in the subsequent years. Three rounds of surveys (ground lek counts and searches) were conducted by biologists to check the known lek sites and to search for new grouse (sage-grouse and sharp-tailed grouse) leks within the wildlife survey area in both spring 2014 and 2015. In spring 2018, the regional WGFD and Bureau of Land Management (BLM) biologists completed counts at the known leks; therefore, only two additional visits to search for new leks were completed within the wildlife survey area that year. The survey dates for each year of subsequent monitoring are listed below:

- April 1, 9, and 21, 2014;
- April 6, 17, and 25, 2015; and
- April 27 and May 7, 2018.

All visits were completed between 30 minutes before sunrise to 1 hour after sunrise when favorable weather conditions (no precipitation and calm to light winds) prevailed. Ground searches were concentrated in likely lek habitat (level to rolling sagebrush-grassland). During ground searches, personnel frequently stopped at numerous vantage points (spaced no more than 1.0-mile apart) in appropriate habitat throughout the entire wildlife survey area to ensure full coverage.

Due to the prevalence of sagebrush habitats west and south of the permit area (as evidenced by designated sage-grouse core area) sage-grouse winter use surveys were also conducted on two visits during the winter of 2014/2015. Those surveys occurred between December and February 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 colder periods of the winter months. Additional winter use surveys are planned for winter 2018/2019, and a supplemental letter detailing those survey results will be presented to WDEQ-LQD for inclusion in the Upton Plant Site wildlife documentation once they have been completed.

Regardless of the season, all upland game bird use (recorded as either actual observations or documentation of their sign [e.g., droppings, cecal deposits, and/or feathers]) was recorded during all wildlife surveys within the Upton Plant Site survey area. Data collected on those occasions included the species, location, habitat, and number, sex, and activity (if live observations).

D9-B.3.3 Raptor Nests

Raptor nest surveys for the Upton Plant Site were conducted each spring and summer in 2014, 2015, and 2018 as both comprehensive nest searches and monitoring, as well as opportunistic observations of raptors while traveling throughout the survey area. Searches for new nests and productivity checks at active nests were conducted on several days each year from April through August. The status (active, inactive, or alternate) and condition of all nests and the presence of young at active nests were recorded during each visit. During all field work, guidelines recommended by Rosenfield et al. (2007) were followed to prevent nest abandonment, damage to eggs, or injury to young. Early in the breeding season, nests were identified and observed from a distance using binoculars and a spotting scope. Nests were not approached on foot prior to late May or until adult pairs were finished incubating and brooding newly hatched young. All active nests were monitored until the pair's breeding attempt failed or young fledged.

Biologists also searched for new nests by slowly driving through the survey area and frequently stopping to examine typical nesting habitat (e.g., trees, draws, and knolls or hillsides). While in the field, personnel continually watched for adult raptors. Areas where individuals or pairs were repeatedly seen were also thoroughly searched for nests during the appropriate time of year to avoid disruptions that could potentially jeopardize nesting success.

D9-B.3.4 Federally Listed, Sensitive, and Other Species of Concern

As of November 2018, there were two species listed or involved in the listing process by the USFWS under the ESA for Weston County, Wyoming (including the Upton Plant Site): the Ute ladies'-tresses (*Spiranthes diluvialis*) (threatened) and northern long-eared bat (*Myotis septentrionalis*) (threatened) (USFWS 2018a).

USFWS-listed wildlife species are unlikely to occur in the Upton Plant Site survey area due to range and/or habitat considerations, and no targeted surveys were conducted for any listed species from 2014 through 2018. However, biologists watched for these species and the habitats that could support them during all survey efforts, and all incidental wildlife detections were recorded during all site visits. Surveys for the Ute ladies'-tresses and its potential habitat were not included in the wildlife monitoring program. Therefore, this species is not addressed further in this document. Information on the Ute ladies'-tresses can be found in the separate baseline and updated vegetation assessments (see Addenda D8-2 and D8-2-G).

The USFWS also utilizes an interactive Information Planning and Conservation System (IPaC), which provides ready access to lists of potentially affected species of concern within a given project area to help avoid, minimize, and mitigate impacts that may result from project activities. As of November 2018, five species (in addition to the Ute ladies'-tresses and northern long-eared bat) were listed on the IPaC report for the Upton Plant Site (USFWS 2018b). Those five species include the Brewer's sparrow (*Spizella breweri*), golden eagle (*Aquila chrysaetos*), lark bunting (*Calamospiza melanocorys*), sage thrasher (*Oreoscoptes montanus*), and willet (*Tringa semipalmata*). All of these are avian species, protected under the Migratory Bird Treaty Act (MBTA) and/or Bald and Golden Eagle Protection Act (BGEPA), which affords protections to both eagle species and native migratory non-game birds and their nests and eggs. Generally, these additional avian species are designated by the USFWS (2008) as Birds of Conservation Concern (BCC), with conservation concerns related to population declines, small range or population sizes due to natural or human-caused factors, threats to habitat, or other factors. 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. The Upton Plant Site is within BCC-BCR 17 of the United States - Badlands and Prairies - which includes 28 overall avian species of concern.

The USFS and WGFD also maintain separate lists of potentially imperiled or at-risk species in Wyoming. The USFS Region 2 Threatened, Endangered, Proposed, and Sensitive (TEPS) Species List (USFS 2017), which includes species of management concern within the wildlife survey area on the adjacent Thunder Basin National Grassland (TBNG), remains the same as previously detailed in Addendum D9-2 (Sections D9-2.3.8 and D9-2.4.8). The WGFD updated their State Wildlife Action Plan (SWAP), and consequently their Species of Greatest Conservation Need (SGCN) List, in 2017 (WGFD 2017). That list now includes 229 total species designated as conservation concern in the state, though many of those species are unlikely to occur in the Upton Plant Site survey area due to the absence of suitable habitat and/or limitations

to their geographical range. All current listing designations (i.e., ESA, IPaC, BCR-17, TEPS, and SGCN) are noted for each species in the updated potential and documented species list for the Upton Plant Site provided in Attachment D9-B.9-1.

The black-tailed prairie dog (*Cynomys ludovicianus*) is listed as a USFS Region 2 TEPS on the TBNG (USFS 2017) and a SGCN for the WGFD (2017). In each year of 2014, 2015, and 2018, active black-tailed prairie dog colonies were mapped to determine changes within the colony size (acres of intact burrows) and the relative density of prairie dog occupancy. Colonies were mapped by using a hand-held global positioning system (GPS) receiver to record coordinates around the outermost burrows of each colony edge; coordinates were taken every 10 meters. A start/stop coordinate was taken at each start point to ensure that the boundary was 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. The outer perimeter of a colony was delineated based solely on the presence of intact burrows, rather than additional use areas such as "clipped" vegetation indicating foraging areas. An intact status at each outermost burrow was confirmed by the presence of prairie dogs, mounds with unobstructed entrances, fresh diggings, and/or fresh scat. Collapsed burrows or burrows with overgrown vegetation were not used to map the outer perimeter.

D9-B.3.5 Other Animals

With the exception of surveys detailed above, no other quantitative surveys targeting big game, mammalian predators or furbearers, lagomorphs (rabbits and hares), small mammals, bats, additional avian species (e.g., songbirds and waterfowl), herptiles (reptiles and amphibians), fisheries, or aquatic or terrestrial invertebrates were conducted specifically for the Upton Plant Site from 2014 through 2018. The WGFD's (2012b) big game seasonal range delineations discussed and depicted in Addendum D9-2 (Section D9-2.4.2 and Figure D9-2-3, respectively) remain current as of 2018. Nevertheless, all sightings of non-targeted animals throughout the proposed Upton Plant Site wildlife survey area were recorded and maintained in a species list during site visits each year in 2014, 2015, and 2018. An updated potential and documented species list for the Upton Plant Site is provided in Attachment D9-B.9-1.

D9-B.4 RESULTS AND DISCUSSION

D9-B.4.1 Wildlife Habitat Assessment

A reassessment in 2018 of available habitats that could provide unusual or high-value wildlife habitats/features for USFWS T&E species within the Upton Plant Site permit area and surrounding 1.0-mile perimeter resulted in little substantial change from the original baseline evaluation conducted in 2012 and 2013. As stated, heavy precipitation events regularly occurred throughout spring and summer 2018, which provided inundated aquatic habitats much of the year. Those conditions naturally enhanced potential bat foraging habitat among the numerous ponds and impoundments present within the survey area. However, these habitats do not qualify as atypical or unusual in regard to the potential for attracting T&E species disproportionately to the surrounding landscape. The wet conditions in 2018 were temporary in nature (i.e., susceptible to annual precipitation fluctuations) and occurred region-wide, as similar conditions were documented across the greater landscape.

The only notable localized change in habitats between the two assessment periods (2012/2013 and 2018) was in regard to the prairie dog colony located in west-central Section 31, T48N, R65W at the western extreme of the survey area. The USFS poisoned the colony in 2017, and the abundance of precipitation in 2018 generated noticeable amounts of revegetation in substantial portions of the colony. Prairie dogs still occupied the colony in 2018, but the colony acreage (i.e., intact burrows) from the previous survey year diminished by approximately 42 percent (58.0 acres in 2015 to 33.4 acres in 2018).

Otherwise, the previously identified wildlife habitat types (upland shrubland, bottomland shrubland, and grassland) and their distribution appeared to remain largely the same as in prior survey years. Again, those habitats roughly correspond with the major plant communities defined in the baseline and updated vegetation assessments (see Addenda D8-2 and D8-2-G).

D9-B.4.2 Upland Game Birds

Only one upland game bird species (sage-grouse) was documented within the Upton Plant Site survey area in 2014, 2015 and 2018, though the sharp-tailed grouse and wild turkey (*Meleagris gallopavo*) were both recorded in the area during the original baseline surveys (2012 and 2013). As in the past, evidence of breeding and possible nesting was documented for sage-grouse during the more recent survey period. Suitable seasonal sage-grouse habitats (including nesting, brood-rearing, and wintering) remain relatively abundant in portions of the survey area (primarily in the western half). Those habitats are detailed further in Addendum D9-2 (Sections D9-2.4.1 and D9-2.4.3).

Two sage-grouse leks (Upton 3 and Stellwagon) have been identified within the Upton Plant Site wildlife survey area (2.0-mile perimeter). One additional lek (McCrady) is located less than 0.1 mile west of the survey area; all three lek sites are depicted on Figure D9-B.8-1 and their peak count histories are presented in Table D9-B.7-1.

According to WGFD data (2018), the Upton 3 lek was first discovered in 1967 with a peak count of 13 males. The lek was active in the subsequent 7 years (1968 through 1974) with a peak count during that period of 20 males recorded in 1974. No counts were conducted at the lek again until 2004, and no grouse were recorded at the site that year. The lek was not surveyed again until 2011, but counts were completed at the lek in each of the following years through 2018 (last 8 years). In each of those years, no grouse were recorded at the site.

The Stellwagon lek was first discovered during surveys for the Upton Plant Site near the end of the 2014 grouse survey period, when two dispersed displaying males were observed on a single day. Due to the expiring seasonal survey period, the site could not be confirmed as a lek that year because of the single recorded observation. However, the lek site was confirmed in the next year (2015), when displaying males were observed during all three counts. A peak count of 11 males was observed on April 6. BLM and WGFD biologists also documented attendance at the lek each of the following 3 years (2016 through 2018), with as many as 38 males recorded in 2016 as a peak count during those years.

The McCrady lek was also discovered during surveys for the Upton Plant Site. The lek was first documented in the last year of the original baseline surveys (2013), when a peak count of 17 males was recorded. Male grouse attendance decreased in the next 2 years (2014 and 2015), with peak counts of 7 and 12 males in each year, respectively. BLM biologists completed counts at the lek each of the following 3 years (2016 through 2018). Grouse attendance numbers rebounded considerably in 2016 and 2017, with peak counts of 25 and 20 males recorded in each of those years, respectively. The peak count in 2018, however, was considerably lower with only 13 males observed that year.

Based on WGFD data (2018) and the accounts detailed above, the Stellwagon and McCrady leks remain designated as 'occupied' for their long-term management status due to the recent activity recorded at each site. The Upton 3 lek remains designated as 'undetermined' until at least 10 consecutive years of inactivity have been documented (currently, there are 8 years of inactivity recorded). Despite the additional visits completed in 2018 to search for new leks within the wildlife survey area, no new leks were found.

Ground surveys completed in winter 2014/2015 resulted in one observation of wintering grouse within the Upton Plant Site survey area. A flock of at least 14

sage-grouse was recorded in sparse sagebrush habitat north of the two-track road in NE ¼ NW ¼ Section 5, T47N, R65W (Figure D9-B.8-1). No other sage-grouse or their sign were detected during any other wildlife surveys.

D9-B.4.2 Raptor Nests

Three confirmed raptor territories/nests were documented within the Upton Plant Site survey area during the original wildlife baseline surveys in 2012 and 2013. Those included one nest of each of the following species: the burrowing owl (*Athene cunicularia*; BUOW1a), golden eagle (*Aquila chrysaetos*; GOEA1), and red-tailed hawk (*Buteo jamaicensis*; RTHA1) (Figure D9-B.8-1). One historical ferruginous hawk (*Buteo regalis*) nest record (USFS 2005) also exists within the survey area, but an intact nest has not been present at the site (SW ¼ NE ¼ Section 4, T47N, R65W; Figure D9-B.8-1) during any of the monitoring years for the Upton Plant Site.

Subsequent nest monitoring and searching in 2014, 2015, and 2018 identified two additional nests within the wildlife survey area. One additional burrowing owl nest site (BUOW1b) and one new red-tailed hawk territory/nest (RTHA2) was recorded in 2014. All five intact nests were monitored in each year afterward, and no new raptor nests were documented after 2014. All raptor nest sites (historical and intact) are depicted on Figure D9-B.8-1 and their histories of activity are presented in Table D9-B.7-2.

The pair of nesting burrowing owls was first discovered in 2013 on the northwestern fringe of the prairie dog colony in NW ¼ NW ¼ Section 31, T48N, R65W. The pair successfully nested that year at the BUOW1a burrow nest and fledged at least two young. In 2014, the pair again nested in the prairie dog colony, but at a burrow (BUOW1b) more central to the colony. The pair fledged four young that year. In 2015 and 2018, no burrowing owls were recorded nesting at the colony or elsewhere within the wildlife survey area.

The RTHA1 and GOEA1 nests were both first discovered and active in 2012. Each pair fledged young (one young for the golden eagle pair and at least one young for the red-tailed hawk pair) that year. In 2013, both pairs tended (i.e., defended and placed new material in the nest) their respective nests, but did not lay eggs or occupy the nest during the breeding season. Early spring snow storms and heavy rain events in 2013 impacted numerous nesting raptor pairs throughout the region. Also, prey abundance indices for large raptors (i.e., lagomorphs [rabbits and hares]) were quite low that year. Prey populations in the region rebounded in 2014 and peaked in early 2017; many large raptor species in the region exhibited high productivity during that period (Annual Wildlife Monitoring Reports for various coal mines, on file with the WDEQ-LQD Cheyenne and Sheridan, Wyoming, offices). The GOEA1 and RTHA1 pairs

successfully nested in both 2014 and 2015, fledging one (GOEA1) or two (RTHA1) young each of those years.

The extremely high density of lagomorphs in early 2017 likely triggered an outbreak of tularemia (*Francisella tularensis*), which was documented in the region in late 2017. That disease has been known to contribute to the cyclic nature of lagomorph populations. Effects from the outbreak continued through the 2018 monitoring period, as lagomorph numbers remained quite low that year. Persistent winter conditions (cold temperatures and frequent precipitation events) in early spring followed by frequent heavy, late spring thunderstorms also likely impacted nesting raptor pairs in 2018. The GOEA1 pair initiated nesting late that year and fledged one young. However, the RTHA1 pair only tended their nest and never laid eggs.

The RTHA2 territory/nest was first recorded and active in 2014. The pair was seen building and defending the nest in a short juniper (*Juniperus scopulorum*) tree at the southeastern extent of the wildlife survey area (while the RTHA1 territory was also active that year). The RTHA2 pair did not lay eggs or occupy the nest during the 2014 breeding season, but were suspected to have nested south of the survey area. The RTHA2 nest was unoccupied in each subsequent year of monitoring (2015 and 2018); however, an adult was seen tending the nest in the early breeding season of 2018. Due to challenging weather conditions that likely impacted nesting chronology and the lack of any additional sightings at or near the RTHA2 nest, it could not be determined whether the pair may have attempted to nest outside the survey area in 2018.

Aside from the species associated with the known nest sites, at least two other raptor species were recorded within the Upton Plant Site survey area during other wildlife surveys in 2014, 2015, and 2018. American kestrels (*Falco sparverius*) were fairly common, and were frequently seen perched on power lines or foraging among the grassland and shrubland habitats. Although individual females and males were observed, no male/female kestrel pairs were identified and no breeding or nesting evidence (direct or indirect) was recorded for this species. Northern harriers (*Circus cyaneus*) were also frequently recorded in the vicinity, but were slightly more concentrated among the major drainages and associated grassland or shrubland habitats within the permit area and western extent of the survey area. Similar to the kestrel, several males and females were observed, but no male/female pairs were documented.

D9-B.4.3 Federally Listed, Sensitive, and Other Species of Concern

No current USFWS T&E vertebrate species listed for Weston County, Wyoming (the northern long-eared bat; USFWS 2018a) were recorded within the Upton Plant Site survey area in 2014, 2015, or 2018. Furthermore, as of November

2018, no critical habitat for this species hase been designated by the USFWS in the survey area. Information on the natural history and habitats that may support the northern long-eared bat within the vicinity of the Upton Plant Site are detailed in Addendum D9-2 (Sections D9-2.3.8 and D9-2.4.8). As stated, a reassessment in 2018 of the available habitats that could provide unusual or high-value wildlife habitats/features for USFWS T&E species within the Upton Plant Site permit area and surrounding 1.0-mile perimeter identified no change from the original baseline evaluation conducted in 2012 and 2013.

The northern long-eared bat is considered common in the higher elevations near the Wyoming and South Dakota border (i.e., Black Hills), but uncommon or rare in the lower elevations and open habitats (Wyoming Natural Diversity Database 2012). On April 2, 2015, the USFWS issued a final rule listing the northern long-eared bat as threatened (80 FR 17974). The USFWS later accompanied that ruling 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 (greater than 150 miles) 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. As of November 2018, the closest confirmed occurrence of white-nose syndrome occurs at least 34 miles southeast of the Upton Plant Site in Custer County, South Dakota (White-Nose Syndrome Response Team 2018). Based on recent findings related to the spread of white-nose syndrome westward, the 4(d) rule and its allowed exceptions do not apply to activities within the Upton Plant Site permit area. However, no disturbance of potential bat roosting habitat (e.g., woodlands and underground features such as caves and adits) is expected to occur at the Upton Plant Site.

Seven species are listed in the IPaC report (as of November 2018; USFWS 2018b) for the Upton Plant Site; two (the northern long-eared bat and Ute ladies'-tresses) have been previously addressed. The remaining five are all avian species, protected under the MBTA, and have been recorded at some time (from 2012 through 2015 and/or in 2018) during wildlife monitoring for the Upton Plant Site. One of those species, the golden eagle, was detailed in Section D9-B.4.2 above and is included on the USFWS BCC-BCR17 list (2008) as a species of management concern. Brief summaries of the historical occurrences within the Upton Plant Site survey area for the four additional species are provided below.

The Brewer's sparrow and lark bunting are both considered common summer residents in Wyoming (Orabona et al. 2016) and have been documented breeding throughout Weston County. Both species are common breeders and widely distributed within the Upton Plant Site survey area, having been documented in each year of wildlife monitoring for the project. Lark buntings are found in more varying habitats but are typically associated with grassland and shrubland or a mixture of those communities. Occurrences of Brewer's sparrows have been recorded almost exclusively in big sagebrush stands, their preferred habitat (Rotenberry et al. 1999). The Brewer's sparrow is included on the USFWS BCC-BCR17 list (2008) as a species of management concern.

The sage thrasher is also listed as a common summer resident in Wyoming (Orabona et al. 2016) and has been observed breeding in Weston County. Documented occurrences of this species within the Upton Plant Site survey area, however, are typically restricted to more localized areas where their preferred habitat (dense sagebrush stands) is particularly suitable and/or concentrated. This species was recorded during the original baseline surveys in 2012 and 2013, but has not been recorded in any of the subsequent years of monitoring (2014, 2015, or 2018). The sage thrasher is included on the USFWS BCC-BCR17 list (2008) as a species of management concern.

The willet is considered a common summer resident in Wyoming (Orabona et al. 2016), but due to its association with moist habitats (e.g., marshes and wet grasslands), occurrence in the semi-arid landscape of northeastern Wyoming is typically seasonal or highly localized. The abundance of ponds and impoundments near the Upton Plant Site, however, provides for at least suitable seasonal habitat in most years. As stated, 2018 was a particularly wet year, which provided for ample shorebird habitat, and this species was recorded in early spring that year. No prior detections of this species were recorded within the survey area.

Numerous USFS Region 2 (which includes the TBNG) TEPS and WGFD SGCN species have been recorded within the Upton Plant Site survey area over time. Survey results detailing the occurrence of those species were provided throughout this document and Addendum D9-2. All documented wildlife USFS Region 2 TEPS and WGFD SGCN recorded within the survey area during the entire course of wildlife monitoring for the Upton Plant Site are included in Attachment D9-B.9-1 at the end of this document.

Searches for and subsequent mapping of prairie dog colonies within Upton Plant Site survey area identified a single colony located in west-central Section 31, T48N, R65W at the western extreme of the survey area. Mapped colony acreage (i.e., intact burrows) decreased by approximately 42 percent between the last 2 years of monitoring (58.0 acres in 2015 and 33.4 acres in 2018). That difference was likely attributed to prairie dog control measures

implemented by the USFS (the landowner), as the colony was poisoned in 2017. The combination of decreased prairie dog activity and abundant precipitation in 2018 resulted in noticeable revegetation throughout substantial portions of the colony. The black-tailed prairie dog is listed as both a USFS Region 2 TEPS and a WGFD SGCN.

D9-B.4.5 Other Animals

Numerous other wildlife species have been recorded within the Upton Plant Site survey area over time. Some of those species were recorded during the original baseline surveys as well as the more recent years of monitoring (2014, 2015, and/or 2018). All documented wildlife species recorded within the survey area during the entire course of wildlife monitoring for the Upton Plant Site are included in Attachment D9-B.9-1 at the end of this document.

D9-B.5 CONCLUSIONS

As with Addendum D9-2, this document is not provided to analyze the potential impacts on wildlife and wildlife habitats associated with the proposed development of the Upton Plant Site. A complete and separate Environmental Impact Statement has been prepared for that purpose. However, as recommended by WDEQ-LQD Guideline No. 5 (1994), general considerations for disturbance associated with the Upton Plant Site and important wildlife habitats, features, and/or occurrences in the area are addressed. Addendum D9-2 presents those considerations as it relates to the original wildlife baseline monitoring and documentation in 2012 and 2013; in most instances, that information remains current and valid. Subsequent monitoring in 2014, 2015, and 2018 for select wildlife information provides the basis for additional discussion in instances where more current data is now available. Only these areas of focus are discussed below.

Wildlife habitats within the Upton Plant Site wildlife survey area are common to the overall region of northeastern Wyoming. They are generally characterized by open, level to rolling topography with low vegetative structure and diversity. A reassessment in 2018 of the available habitats that could provide unusual or high-value wildlife habitats/features for USFWS T&E species within the Upton Plant Site permit area and surrounding 1.0-mile perimeter identified no change from the original baseline evaluation conducted in 2012 and 2013.

Suitable habitats for upland game birds, primarily sage-grouse, are fairly prevalent within the Upton Plant Site wildlife survey area. Seasonal sage-grouse habitats (including nesting, brood-rearing, and wintering) remain relatively abundant in the western and southern portions. Those habitats are

further detailed in Addendum D9-2 (Sections D9-2.3.3 and D9-2.4.3). Although the USFWS issued a determination that this species was not warranted for listing and would no longer be designated as a candidate species in 2015, another status review will be conducted for the species in 2020. At this time the sage-grouse receives no special protection at the Federal level and will continue to be managed throughout its range at the State level (e.g., by the WGFD). In 2015, the State of Wyoming issued Executive Order No. 2015-4 (2015) to continue implementation of the sage-grouse core population and connectivity area policy. The most recent Executive Order designates sage-grouse core population area immediately west and south of the Upton Plant Site, but the proposed permit area remains outside of any defined sage-grouse core population areas or connectivity corridors (WGFD 2015).

One occupied sage-grouse lek (Stellwagon) and one undetermined lek (Upton 3) exists within the Upton Plant Site wildlife survey area. The Stellwagon lek is approximately 1.9 miles southwest of the permit area, and the Upton 3 lek is approximately 0.7 mile to the south. One additional occupied lek (McCrady) is less than 0.1 mile west of the wildlife survey area (approximately 2.0 miles from the permit area). No grouse have been recorded at the Upton 3 lek since monitoring for the Upton Plant Site began in 2012. The McCrady and Stellwagon leks were discovered during monitoring for the project in 2013 and 2014, respectively. Both leks have been active (i.e., displaying male grouse present) each year since their discovery. Sage-grouse winter use in the survey area has also been documented in the past, and a single flock of at least 14 birds was recorded approximately 0.5 mile southwest of the permit area in winter 2014/2015. Additional winter use surveys are planned for winter 2018/2019, and a supplemental letter detailing those survey results will be presented to WDEQ-LQD for inclusion in the Upton Plant Site wildlife documentation once they have been completed. Regardless of the season, no sage-grouse have been documented to date within the proposed permit area for the duration of the monitoring at the Upton Plant Site.

Despite more recent information on sage-grouse use in the wildlife survey area, it is anticipated that disturbances from the proposed Upton Plant Site will still have a limited influence on upland game birds in the area (including sage-grouse). The closest known sage-grouse lek (Upton 3, 0.7 mile) has not been attended since 2011; 10 years of confirmed inactivity would qualify the site as 'unoccupied' for its management status designation. The two other identified leks (McCrady and Stellwagon) are located slightly less than or just beyond the 2.0-mile survey area with substantial topographic relief between each lek site and the permit area. That setting should provide for considerable distance to minimize both noise and visual impacts. Nesting, brood-rearing, and wintering habitat are much closer to the permit area, but actual surface disturbance is not planned in those habitats. Conversely, existing habitats within the

proposed permit area are marginal to poor for all seasonal aspects associated with sage-grouse.

Suitable nesting and foraging habitat for raptors remains limited within the Upton Plant Site wildlife survey area. Few trees and little distinct topography (e.g., cliffs, buttes, rock outcrops, and eroded creek banks) are available in the survey area. Based on additional monitoring in 2014, 2015, and 2018, four species of raptors (the golden eagle, red-tailed hawk, ferruginous hawk, and burrowing owl) have documented nests within the survey area. However, the lone historical nest record for the ferruginous hawk has been gone since monitoring for the project began in 2012.

Otherwise, four raptor pairs (two red-tailed hawk pairs and one each of burrowing owls and golden eagles) have attempted to nest with varying degrees of annual success (largely influenced by natural factors such as weather and prey availability) over the course of monitoring for the Upton Plant Site. All five known nest sites associated with these four territories are currently intact; none of them are located within the proposed Upton Plant Site permit area. Additionally, none of the intact nest records exist within the recommended USFWS (2009) species buffer distance (0.25 mile for burrowing owls and red-tailed hawks to 0.5 mile for golden eagles) to the planned disturbance within the proposed permit area. The ferruginous hawk nest record is within the recommended USFWS buffer distance for that species (1.0 mile), but again, that nest has been gone since monitoring for the project began in 2012.

As of November 2018, there were two species listed or involved in the listing process by the USFWS under the ESA for Weston County, Wyoming (including the Upton Plant Site): the Ute ladies'-tresses (threatened) and northern long-eared bat (threatened) (USFWS 2018a). No targeted surveys were conducted for any listed species from 2014 through 2018, but biologists watched for these species and the habitats that could support them during all survey efforts. Information on the Ute ladies'-tresses can be found in the separate baseline and updated vegetation assessments (see Addenda D8-2 and D8-2-G).

No current USFWS T&E vertebrate species (the northern long-eared bat) were recorded within the Upton Plant Site survey area in 2014, 2015, or 2018, and no critical habitats are currently designated in the survey area. A reassessment in 2018 of the available habitats that could provide unusual or high-value wildlife habitats/features for USFWS T&E species within the Upton Plant Site permit area and surrounding 1.0-mile perimeter identified no change from the original baseline evaluation conducted in 2012 and 2013. Based on the USFWS decision to list the northern long-eared bat as threatened (80 FR 17974) and the final 4(d) rule (81 FR 1900) that accompanied the decision, prohibition of incidental take from otherwise lawful management activities would not be exempted for the Upton Plant Site because it does not exceed the

distance (greater than 150 miles) of potential effect to the nearest known occurrence of white-nose syndrome (at least 34 miles southeast in Custer County, South Dakota; White-Nose Syndrome Response Team 2018). However, no disturbance of potential bat roosting habitat (e.g., woodlands and underground features such as caves and adits) is expected to occur at the Upton Plant Site.

Numerous wildlife species, including some listed in the USFWS IPaC report for the Upton Plant Site (USFWS 2018b) or designated as species of management concern within BCC BCR-17 (USFWS 2008), USFS Region 2 TBNG, or as WGFD SGCN, have been recorded within the Upton Plant Site survey area over time. All potential and documented wildlife species recorded within the survey area during the entire course of wildlife monitoring for the Upton Plant Site are included in Attachment D9-B.9-1 at the end of this document. The overall distribution of those taxa or species, and their occurrence or the available habitats to support them within the Upton Plant Site survey area, are detailed in Section D9-2.4.8. The threats and potential impacts from the planned disturbance and operations at the Upton Plant Site are also provided in Section D9-2.5. That information remains current and valid, despite the modified list of potential and documented species included in Attachment D9-B.9-1.

One black-tailed prairie dog colony (33.4 acres) was located within the Upton Plant Site survey area, approximately 1.2 miles west of the permit area. The colony hosted only pockets of moderate prairie dog densities in 2018. Due to the distance from the proposed Upton Plant Site permit area, no effect on the colony is anticipated from the plant construction or operations.

D9-B.6 REFERENCES

Baxter, G. T., and M. D. Stone. 1980. Amphibians and Reptiles of Wyoming. Wyoming Game and Fish Department. Cheyenne, Wyoming. Bull. No. 16.

_____. 1995. Fishes of Wyoming. Wyoming Game and Fish Department. Cheyenne, Wyoming.

Burt, W. H. and R. P. Grossenheider. 1976. A Field Guide to the Mammals. Houghton Mifflin Company. Boston, Massachusetts.

Clark, T. W., and M. R. Stromberg. 1987. Mammals in Wyoming. Museum of Natural History, University of Kansas, Lawrence, Kansas.

Executive Order No. 2015-4. 2015. Greater Sage-grouse core area protection. Retrieved from <http://will.state.wy.us/sis/wydocs/execorders.html>.

Federal Register (FR). 2015a. Endangered and Threatened Wildlife and Plants; 12-Month Finding on a Petition To List Greater Sage-Grouse (Centrocercus urophasianus) as an Endangered or Threatened Species. Volume 80, No. 191, Pages 59858-59942. Available: <http://www.federalregister.com /Browse/AuxData/2952F1B6-47D0-4F74-83CA-5BA7DB3FD1EF>.

_____. 2015b. Endangered and Threatened Wildlife and Plants; Threatened Species Status for the Northern Long-Eared Bat with 4(d) Rule. Volume 80, No. 63, Pages 17974-18033. Available: <http://www.federal register.com /Browse/Document/usa/na/fr/2015/4/2/2015-07069>.

_____. 2016a. Endangered and Threatened Wildlife and Plants; 4(d) Rule for the Northern Long-Eared Bat. Volume 81, No. 9, Pages 1900-1922. Available: <https://www.federalregister.gov/documents/2016 /01/14/2016-00617/endangered-and-threatened-wildlife-and-plants-4d-rule-for-the-northern-long-eared-bat.html>.

_____. 2016b. Endangered and Threatened Wildlife and Plants; Determination That Designation of Critical Habitat Is Not Prudent for the Northern Long-Eared Bat. Volume 81, No. 81, Pages 24707-24714. Available: <https://www.fws.gov/ policy/library/2016/2016-09673.html>.

Jones, J. K., Jr., D. M. Armstrong, R. S. Hoffmann, and C. Jones. 1983. Mammals of the Northern Great Plains. University of Nebraska Press, Lincoln, Nebraska.

Lewis, D. 2011. A Field Guide to Amphibians and Reptiles of Wyoming. The Wyoming Naturalist. Douglas, Wyoming.

Orabona, A. C., C. K. Rudd, N. L. Bjornlie, Z. J. Walker, S. M. Patla, and R. J. Oakleaf. 2016. Atlas of birds, mammals, amphibians, and reptiles in Wyoming. Wyoming Game and Fish Department Nongame Program. Lander, Wyoming.

Peterson, R. T. 1990. A Field Guide to Western Birds. Houghton Mifflin Company, Boston, Massachusetts.

Rosenfield, R. N., J. W. Grier, and R. W. Fyfe. 2007. Reducing management and research disturbance. In D. M. Bird, K. L. Bildstein, D. R. Barber, & A. Zimmerman (Eds.), Raptor Research and Management Techniques (pp. 351–364). Raptor Research Foundation. Hancock House Publishers.

Rotenberry, J. T., M. A. Patten, and K. L Preston. 1999. Brewer's sparrow (Spizella breweri). In The Birds of North America, No. 390 (A. Poole and F. Gill, Eds.), The Academy of Natural Sciences, Philadelphia, Pennsylvania, and The American Ornithologists' Union, Washington, D.C.

Sibley, D. A. 2000. The Sibley Guide to Birds. Alfred A. Knopf, New York, New York.

Stokes, D. W. and L. Q. Stokes. 1996. Field Guide to Birds: Western Region. Little, Brown and Company. New York, New York.

U.S. Forest Service (USFS). 2005. ArcGIS shapefiles: TB_wild_obs_pts. USDA Forest Service, Douglas Ranger District, Douglas, Wyoming. July 2005.

_____. 2017. Amendment No.: 2600-2017-1. FSM 2600 - wildlife, fish, and sensitive plant habitat management. Chapter 2670 – threatened, endangered and sensitive plants and animals. USDA Forest Service Manual, Rocky Mountain Region, Denver Co. July 2017.

U. S. Fish and Wildlife Service (USFWS). U. S. Fish and Wildlife Service (USFWS). 2008. Birds of Conservation Concern 2008. United States Department of Interior, Fish and Wildlife Service, Division of Migratory Bird Management, Arlington, VI. 85 pp. [Online version available at <http://www.fws.gov/migratorybirds/>] (citation from USFWS website).

_____. December 2009. Wyoming Field Office Guidelines for Raptor Protection Proximal to Disturbance from Land Use Activities. USFWS Ecological Services, Cheyenne Field Office. Cheyenne, Wyoming.

_____. 2018a. List of Threatened and Endangered Species: Weston County, Wyoming. USFWS Ecological Services Cheyenne Field Office. Cheyenne, Wyoming. https://www.fws.gov/wyominges/Species_WYESlist.php Accessed: November 2018.

_____. 2018b. Information for Planning and Conservation Trust Resources Report (for Upton Plant Site). Generated November 4, 2018, from https://ecos.fws.gov/ipac/location/KSBLFA4A7RAIRHEQUQ5WXVAK6I/ resources.pdf.

White-nose Syndrome Response Team. 2018. White-nose Syndrome Occurrence Map by Year (2018). Data Last Updated October 1, 2018. Available at https://www.whitenosesyndrome.org/resources/map.

Wyoming Department of Environmental Quality, Land Quality Division (WDEQ-LQD). 1994. Guideline 5, Wildlife. Updated. Available: <http://deq.state.wy.us/ lqd/guidelns/ Guideline5.pdf>. Accessed: June 2010.

Wyoming Game and Fish Department (WGFD). 2007. Handbook of Biological Techniques; Third Edition. Wyoming Game and Fish Department, Cheyenne, Wyoming.

_____. 2012a. Wyoming Sage-grouse Lek Definitions. Wyoming Game and Fish Department, Cheyenne. Wyoming. November 2012.

_____. 2012b. ArcGIS shapefiles: elk12sr.shp, mdr12sr.shp, ant12sr.shp, & wtd12sr.shp. Wyoming Game and Fish Department, Cheyenne. Wyoming. July 2012.

_____. 2015. ArcGIS shapefiles: WGFD_Core_Areas_v4_072915 and WGFD_ Connectivity_Areas_072915. Sheridan, Wyoming. July 2015. Available: https://wgfd.wyo. gov/Habitat/Sage-Grouse-Management.

_____. 2017. Wyoming State Wildlife Action Plan–2017: Species of Greatest Conservation Need. Wyoming Game and Fish Department, Cheyenne, Wyoming.

_____. 2018. SG Lek Locations & Descriptors 2018. [MS Excel data file]. WGFD, Buffalo, Wyoming. October 2018.

Wyoming Natural Diversity Database. 2012. file://\\nas-7F-F4-B8\wyndd_gis\Data_For_Distribution\Range_For_Distribution\Range_Map_Library_Shapefiles\AMACC01150 ("Northern Myotis [Myotis septentrionalis]".shp. [ArcGIS shapefiles]. Laramie, WY: Author.

D9-B.7 TABLES

Table D9-B.7-1. Peak Counts at Three Sage-grouse Leks Near the Upton Plant Site from 2012 through 2018.

	McCrady		**Stellwagon**		**Upton 3**	
Location	SE¼ SW¼ 25, T48N, R66W		SW¼ NE¼ 7, T47N, R65W		SE¼ NW¼ 4, T47N, R65W	
UTM NAD83, Zone 13N	521593E, 4883832N		523818E, 4879702N		526500E, 4881000N	
Year†	M	F	M	F	M	F
2012	--	--	--	--	0	0
2013	17	3	--	--	0	0
2014	7	5	2††	0	0	0
2015	12	4	11	2	0	0
2016	25	23	38	0	0	0
2017	20	0	12	0	0	0
2018	13	1	13	11	0	0
WGFD long-term management status*	**Occupied**		**Occupied**		**Undetermined**	

M = Male; F = Female; -- = Lek not discovered.

† Three counts per year were conducted at all leks from 2012 through 2015 during monitoring for the Upton Plant Site. BLM and/or WGFD biologists completed counts at the leks from 2016 through 2018.

†† The Stellwagon lek was not confirmed as a lek until 2015 when multiple observations of displaying grouse were recorded at the site. However, two dispersed, displaying male grouse were recorded near the site on one survey date in 2014.

* WGFD (2012a) defines an 'occupied' lek as a lek that has been active during at least one strutting season within the prior 10 years, and an 'undetermined' lek as a lek that has not been documented active in the last 10 years with insufficient survey information to designate it as 'unoccupied'.

Table D9-B.7-2. Raptor Nest Locations (UTM NAD83, Zone 13N), Status, and Productivity Near the Upton Plant Site from 2012 through 2015 and in 2018.

Nest Name	UTM X, UTM Y	Substrate	¼ ¼ Section T(N), R(W)	2012	2013	2014	2015	2018
BUOW1a	522620, 4883453	PB	NW NW 31, 48, 65	---	A,2+,2+	A-T, ALT	I	I
BUOW1b	522729, 4883357	PB	NW NW 31, 48, 65	---	---	A,4,4	I	I
FEHA1	526838, 4881432	G	SW NE 4, 47, 65	D-N	---	---	---	---
GOEA1	524686, 4880961	CW	NE SW 5, 47, 65	A,1,1	A-T	A,1,1	A,1,1	A,1,1
RTHA1	525138, 4882160	CW	SW SE 32, 48, 65	A,1+,1+	A-T	A,2,2	A,2,2	A-T
RTHA2*	527164, 4879794	JU	SE NE 9, 47, 65	---	---	A-T	I	A-T
Burrowing Owl Subtotals:				---	1,2+2+	1,4,4	0	0
Ferruginous Hawk Subtotals:				---	---	---	---	---
Golden Eagle Subtotals:				1,1,1	1,0,0	1,1,1	1,1,1	1,1,1
Red-tailed Hawk Subtotals:				1,1+,1+	1,0,0	2,2,2	1,2,2	2,0,0
GRAND TOTALS:				2,2+,2+	3,2+,2+	4,7,7	2,3,3	3,1,1

* Additional nests within the territory may be beyond the current wildlife survey area.

In *Years* Columns:

X,#,# = Status, number of young hatched, number of young fledged.

#+ = Minimum estimate.

In *Totals* Rows:

#,#,# = total active territories, total young hatched, total young fledged.

Species Codes

BUOW	= Burrowing owl	GOEA	= Golden eagle
FEHA	= Ferruginous hawk	RTHA	= Red-tailed hawk

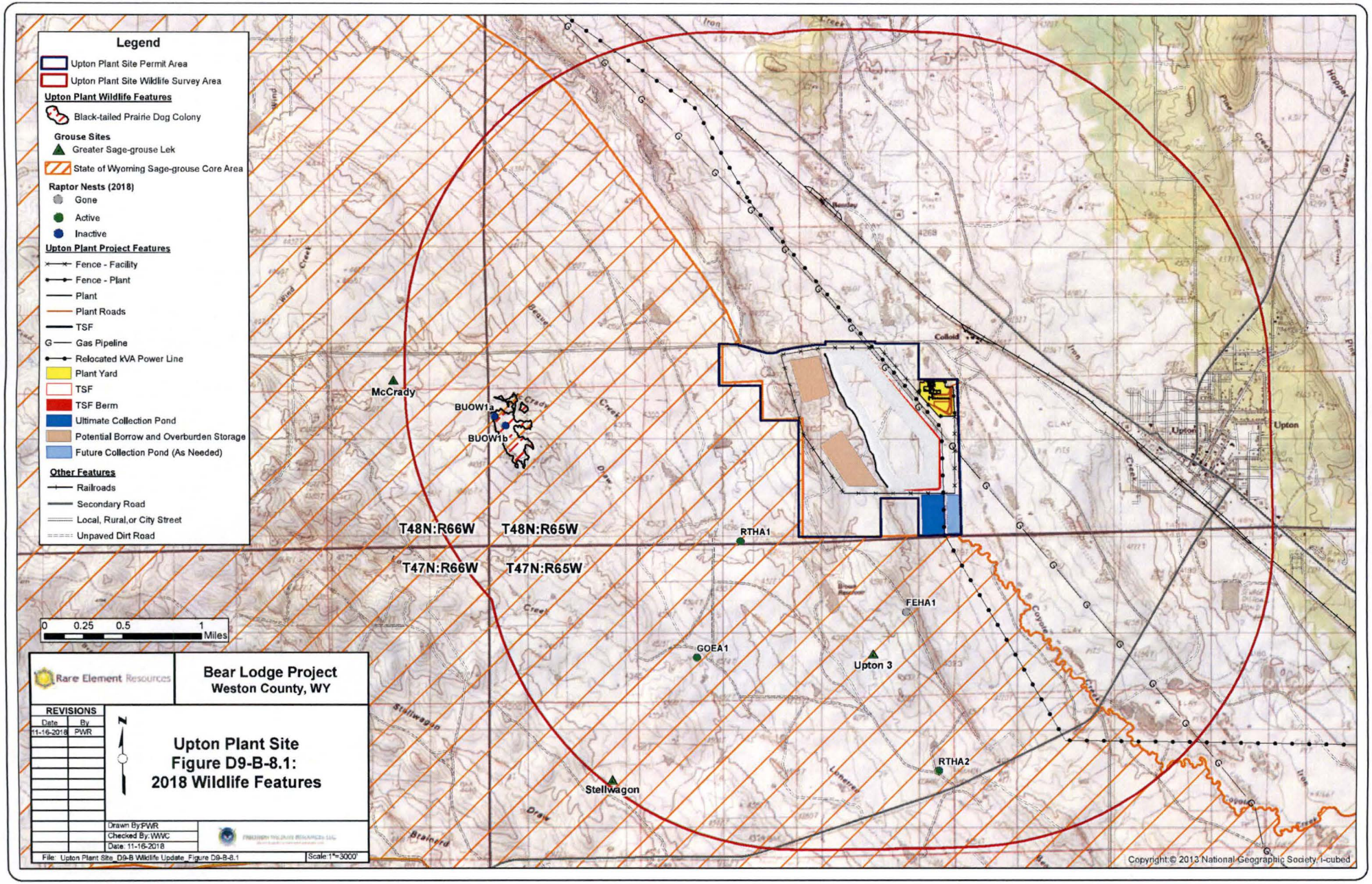
Nest Substrate Codes

CW	= Cottonwood, live	J	= Juniper
G	= Ground	PB	= Prairie dog burrow

Nest Status Codes

A	= Active	D-N	= Destroyed, natural causes
ALT	= Alternate nest	I	= Inactive
A-T	= Active-tended, no eggs laid	---	= Nonexistent/undiscovered

D9-B.8 FIGURES


Legend
Upton Plant Site Permit Area
Upton Plant Site Wildlife Survey Area
Upton Plant Wildlife Features
Black-tailed Prairie Dog Colony
Grouse Sites
Greater Sage-grouse Lek
State of Wyoming Sage-grouse Core Area
Raptor Nests (2018)
Gone
Active
Inactive
Upton Plant Project Features
Fence - Facility
Fence - Plant
Plant
Plant Roads
TSF
Gas Pipeline
Relocated kVA Power Line
Plant Yard
TSF
TSF Berm
Ultimate Collection Pond
Potential Borrow and Overburden Storage
Future Collection Pond (As Needed)
Other Features
Railroads
Secondary Road
Local, Rural, or City Street
Unpaved Dirt Road
McCrady
BUOW1a
BUOW1b
T48N:R66W
T48N:R65W
T47N:R66W
T47N:R65W
RTHA1
FEHA1
GOEA1
Upton 3
RTHA2
Stellwagon
Colloid
Upton
0 0.25 0.5 1 Miles
Rare Element Resources
Bear Lodge Project
Weston County, WY
REVISIONS
Date By
11-16-2018 PWR
Upton Plant Site
Figure D9-B-8.1:
2018 Wildlife Features
Drawn By:PWR
Checked By: WWC
Date: 11-16-2018
File: Upton Plant Site_D9-B Wildlife Update_Figure D9-B-8.1
Scale:1"=3000'
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D9-B.9 ATTACHMENTS

ATTACHMENT D9-B.9-1. POTENTIAL[1] AND DOCUMENTED MAMMALIAN SPECIES LIST FOR THE UPTON PLANT SITE

Common name[2]	Scientific Name[2]	Recorded within the Upton Plant Site Survey Area[3]	Special Status Designation[4]
Insectivores			
Masked shrew	*Sorex cinereus*	---	---
Merriam's shrew	*Sorex merriami*	---	---
Bats			
Western small-footed myotis	*Myotis ciliolabrum*	---	SGCN
Long-eared myotis	*Myotis evotis*	---	SGCN
Fringed myotis	*Myotis thysandoes*	---	TEPS, SGCN
Little brown myotis	*Myotis lucifugus*	---	SGCN
Long-legged myotis	*Myotis volans*	---	SGCN
Northern Long-eared Myotis	*Myotis septentrionalis*	---	T&E, IPAC, SGCN
Eastern red bat	*Lasiurus borealis*	---	SGCN
Hoary bat	*Lasiurus cinereus*	---	TEPS
Silver-haired bat	*Lasionycteris noctivagans*	---	---
Big brown bat	*Eptesicus fuscus*	---	---
Townsend's big-eared bat	*Corynorhinus townsendii*	---	TEPS, SGCN
Hares and Rabbits			
Desert cottontail	*Sylvilagus audubonii*	---	---
Mountain cottontail	*Sylvilagus nuttallii*	---	---
Cottontail species	*Sylvilagus* spp.	X	---
White-tailed jackrabbit	*Lepus townsendii*	X	---
Black-tailed jackrabbit	*Lepus californicus*	---	---
Rodents			
Yellow-bellied marmot	*Marmota flaviventris*	---	---
Least chipmunk	*Tamias minimus*	---	---
Thirteen-lined ground squirrel	*Spermophilus tridecemlineatus*	X	---
Northern pocket gopher	*Thomomys talpoides*	---	---
Plains pocket gopher	*Geomys lutescens lutescens*	---	---
Bushytail woodrat	*Neotoma cinerea*	---	---
Ord's kangaroo rat	*Dipodomys ordii*	---	---

POTENTIAL[1] AND DOCUMENTED MAMMALIAN SPECIES LIST (CONTINUED)

Common name[2]	Scientific Name[2]	Recorded within the Upton Plant Site Survey Area[3]	Special Status Designation[4]
Rodents (Continued)			
Olive-backed pocket mouse	*Perognathus fasciatus*	---	SGCN
Silky pocket mouse	*Perognathus flavus piperi*	---	SGCN
Hispid pocket mouse	*Perognathus hispidus paradoxus*	---	SGCN
Plains harvest mouse	*Reithrodontomys montanus albescens*	---	SGCN
Western harvest mouse	*Reithrodontomys megalotis*	---	---
Deer mouse	*Peromyscus maniculatus*	---	---
Northern grasshopper mouse	*Onychomys leucogaster*	---	---
Meadow vole	*Microtus pennsylvanicus*	---	---
Prairie vole	*Microtus ochrogaster*	---	---
Long-tailed vole	*Microtus longicaudus*	---	---
Sagebrush vole	*Lemmiscus curtatus*	---	SGCN
Black-tailed prairie dog	*Cynomys leucurus*	X	SGCN, TEPS
Common muskrat	*Ondatra zibethicus*	X	---
American beaver	*Castor canadensis*	---	---
North American porcupine	*Erethizon dorsatum*	---	---
Carnivores			
Coyote	*Canis latrans*	X	---
Red fox	*Vulpes vulpes*	X	---
Common gray fox	*Urocyon cinereoargenteus*	---	---
Swift fox	*Vulpes velox*	---	---
Northern raccoon	*Procyon lotor*	X	---
Long-tailed weasel	*Mustela frenata*	---	---
Eastern spotted skunk	*Spilogale putorius*	---	SGCN
American badger	*Taxidea taxus*	X	---
Striped skunk	*Mephitis mephitis*	---	---
Mountain lion	*Puma concolor*	---	---
Bobcat	*Felis rufus*	---	---

POTENTIAL[1] AND DOCUMENTED MAMMALIAN SPECIES LIST (CONTINUED)

Common name[2]	Scientific Name[2]	Recorded within the Upton Plant Site Survey Area[3]	Special Status Designation[4]
Ungulates			
Elk	*Cervus elaphus*	---	---
White-tailed deer	*Odocoileus virginianus*	X	---
Mule deer	*Odocoileus hemionus*	X	---
Pronghorn	*Antilocapra americana*	X	---

POTENTIAL[1] AND DOCUMENTED AVIAN SPECIES LIST FOR THE UPTON PLANT SITE

Common name[2]	Scientific Name[2]	Recorded within the Upton Plant Site Survey Area[3]	Special Status Designation[4]
Loons and Grebes			
Common loon	*Gavia immer*	---	SGCN
Western grebe	*Aechmophorus occidentalis*	---	SGCN
Clark's grebe	*Aechmophorus clarkii*	---	SGCN
Pied-billed grebe	*Podilymbus podiceps*	X	---
Horned grebe	*Podiceps auritus*	---	BCC(17)
Eared grebe	*Podiceps nigricollis*	X	---
Cormorants and Pelicans			
Double-crested cormorant	*Phalacrocorax auritus*	---	---
American white pelican	*Pelicanus erythrorhynchos*	---	SGCN
Swans			
Trumpeter swan	*Cygnus buccinator*	---	SGCN, TEPS
Bitterns and Herons			
American bittern	*Botaurus lentiginosus*	---	BCC(17),SGCN, TEPS
Great blue heron	*Ardea herodias*	X	SGCN
Black-crowned night-heron	*Nycticorax nycticorax*	---	SGCN
Ibis			
White-faced ibis	*Plegadis chihi*	---	SGCN
Geese and Ducks			
Snow goose	*Chen caerulescens*	---	---
Ross's goose	*Anser rossii*	---	---
Greater white-fronted goose	*Anser albifrons*	---	---
Canada goose	*Branta canadensis*	X	---
Cackling goose	*Branta hutchinsii*	---	---
Mallard	*Anas platyrhynchos*	X	---
Gadwall	*Anas strepera*	X	---
Northern pintail	*Anas acuta*	X	---
Northern shoveler	*Anas clypeata*	X	---
American wigeon	*Mareca americana*	X	---
Eurasian wigeon	*Mareca penelope*	---	---

POTENTIAL[1] AND DOCUMENTED AVIAN SPECIES LIST (CONTINUED)

Common name[2]	Scientific Name[2]	Recorded within the Upton Plant Site Survey Area[3]	Special Status Designation[4]
Geese and Ducks (Continued)			
Green-winged teal	*Anas crecca*	X	---
Blue-winged teal	*Anas discors*	X	---
Cinnamon teal	*Anas cyanoptera*	X	---
Wood duck	*Aix sponsa*	X	---
Redhead	*Aythya americana*	X	---
Canvasback	*Aythya valisineria*	X	---
Ruddy duck	*Oxyura jamaicensis*	X	---
Greater scaup	*Aythya marila*	---	---
Lesser scaup	*Aythya affinis*	---	---
Ring-necked duck	*Aythya collaris*	X	---
Common goldeneye	*Bucephala clangula*	X	---
Bufflehead	*Bucephala albeola*	X	---
Common merganser	*Mergus merganser*	X	---
Red-breasted merganser	*Mergus serrator*	---	---
Hooded merganser	*Lophodytes cucullatus*	X	---
Gulls and Terns			
Ring-billed gull	*Larus delawarensis*	---	---
Franklin's gull	*Larus pipixcan*	---	SGCN
Bonaparte's gull	*Chroicocephalus philadelphia*	---	---
California gull	*Larus californicus*	---	---
Herring gull	*Larus argentatus*	---	---
Black tern	*Chidonias niger*	---	SGCN, TEPS
Caspian tern	*Hydroprogne caspia*	---	SGCN
Forster's tern	*Sterna forsteri*	---	SGCN
Cranes and Rails			
Sandhill crane	*Grus canadensis*	---	---
Virginia rail	*Rallus limicola*	---	SGCN
Sora	*Porzana carolina*	---	---
American coot	*Fulica americana*	X	---

POTENTIAL[1] AND DOCUMENTED AVIAN SPECIES LIST (CONTINUED)

Common name[2]	Scientific Name[2]	Recorded within the Upton Plant Site Survey Area[3]	Special Status Designation[4]
Shorebirds			
Killdeer	*Charadrius vociferus*	X	---
Mountain plover	*Charadrius montanus*	---	BCC(17), SGCN, TEPS
Semipalmated plover	*Charadrius semipalmatus*	---	---
Black-bellied plover	*Pluvialis squatarola*	---	---
American avocet	*Recurvirostra americana*	X	---
Black-necked stilt	*Himantopus mexicanus*	---	---
Long-billed curlew	*Numenius americanus*	---	BCC(17), SGCN, TEPS
Marbled godwit	*Limosa fedoa*	---	BCC(17)
Willet	*Catoptrophora semipalmatus*	X	IPaC
Wilson's snipe	*Gallinago delicata*	---	---
Long-billed dowitcher	*Limnodromus scolopaceus*	---	---
Short-billed dowitcher	*Limnodromus griseus*	---	---
Greater yellowlegs	*Tringa melanoleuca*	X	---
Lesser yellowlegs	*Tringa flavipes*	X	---
Solitary sandpiper	*Tringa solitaria*	---	---
Least sandpiper	*Calidris minutilla*	X	---
Baird's sandpiper	*Calidris bairdii*	---	---
White-rumped sandpiper	*Calidris fuscicollis*	---	---
Pectoral sandpiper	*Calidris melanotos*	---	---
Semipalmated sandpiper	*Calidris pusilla*	---	---
Sanderling	*Calidris alba*	---	---
Dunlin	*Calidris alpina*	---	---
Stilt sandpiper	*Calidris himantopus*	---	---
Spotted sandpiper	*Actitis macularius*	X	---
Upland sandpiper	*Bartramia longicauda*	X	BCC(17), SGCN, TEPS
Wilson's phalarope	*Phalaropus tricolor*	X	---
Red-necked phalarope	*Phalaropus*	---	---

POTENTIAL[1] AND DOCUMENTED AVIAN SPECIES LIST (CONTINUED)

Common name[2]	Scientific Name[2]	Recorded within the Upton Plant Site Survey Area[3]	Special Status Designation[4]
Grouse and Turkey			
Greater sage-grouse	*Centrocercus urophasianus*	X	SGCN, TEPS
Sharp-tailed grouse	*Tympanuchus phasianellus*	X	---
Wild turkey	*Meleagris gallopavo*	X	---
Gray partridge	*Perdix perdix*	---	---
Vultures			
Turkey vulture	*Cathartes aura*	X	---
Diurnal Raptors			
Bald eagle	*Haliaeetus leucocephalus*	X	BCC(17), SGCN, TEPS
Golden eagle	*Aquila chrysaetos*	X	BCC(17), IPaC, SGCN
Northern harrier	*Circus cyaneus*	X	TEPS
Sharp-shinned hawk	*Accipiter striatus*	---	---
Cooper's hawk	*Accipiter cooperii*	---	---
Swainson's hawk	*Buteo swainsoni*	---	SGCN
Red-tailed hawk	*Buteo jamaicensis*	X	---
Ferruginous hawk	*Buteo regalis*	X	BCC(17), SGCN, TEPS
Rough-legged hawk	*Buteo lagopus*	X	---
American kestrel	*Falco sparverius*	X	---
Merlin	*Falco columbarius*	---	SGCN
Peregrine falcon	*Falco peregrinus*	---	BCC(17), SGCN, TEPS
Prairie falcon	*Falco mexicanus*	---	BCC(17)
Osprey	*Pandion haliaetus*	---	---
Pigeons and Doves			
Mourning dove	*Zenaida macroura*	X	---
Eurasian-collared dove	*Streptopelia decaocto*	X	---
Rock pigeon	*Columba livia*	X	---

POTENTIAL[1] AND DOCUMENTED AVIAN SPECIES LIST (CONTINUED)

Common name[2]	Scientific Name[2]	Recorded within the Upton Plant Site Survey Area[3]	Special Status Designation[4]
Owls			
Barn owl	*Tyto alba*	---	---
Great horned owl	*Bubo virginianus*	---	---
Snowy owl	*Bubo scandiacus*	---	---
Eastern screech owl	*Megascops asio*	---	---
Long-eared owl	*Asio otus*	---	---
Short-eared owl	*Asio flammeus*	X	BCC(17), SGCN, TEPS
Burrowing owl	*Athene cunicularia*	X	BCC(17), SGCN, TEPS
Goatsuckers			
Common nighthawk	*Chordeiles minor*	X	SGCN
Common poorwill	*Phalaenoptilus nuttallii*	---	---
Swifts			
White-throated swift	*Aeronautes saxatalis*	---	---
Hummingbirds			
Ruby-throated hummingbird	*Archilochus colubris*	---	---
Rufous hummingbird	*Selasphorus rufus*	---	SGCN
Woodpeckers			
Downy woodpecker	*Picoides pubescens*	---	---
Hairy woodpecker	*Dryobates villosus*	---	---
Lewis's woodpecker	*Melanerpes lewis*	---	BCC(17), SGCN, TEPS
Red-headed woodpecker	*Melanerpes erythrocephalus*	---	BCC(17), SGCN
Northern flicker	*Colaptes auratus*	---	---
Flycatchers			
Say's phoebe	*Sayornis saya*	X	---
Eastern kingbird	*Tyrannus tyrannus*	X	---
Western kingbird	*Tyrannus verticalis*	X	---
Cassin's kingbird	*Tyrannus vociferans*	---	---

POTENTIAL[1] AND DOCUMENTED AVIAN SPECIES LIST (CONTINUED)

Common name[2]	Scientific Name[2]	Recorded within the Upton Plant Site Survey Area[3]	Special Status Designation[4]
Flycatchers (Continued)			
Least flycatcher	*Empidonax minimus*	---	---
Dusky flycatcher	*Empidonax oberholseri*	---	---
Western wood-pewee	*Contopus sordidulus*	---	---
Larks			
Horned lark	*Eremophila alpestris*	X	---
Swallows			
Tree swallow	*Tachycineta bicolor*	---	---
Violet-green swallow	*Tachycineta thalassina*	---	---
Bank swallow	*Riparia riparia*	X	---
Northern rough-winged swallow	*Stelgidopteryx serripennis*	---	---
Cliff swallow	*Petrochelidon pyrrhonota*	---	---
Barn swallow	*Hirundo rustica*	X	---
Chickadees and Nuthatches			
Black-capped chickadee	*Poecile atricapillus*	---	---
White-breasted nuthatch	*Sitta carolinensis*	---	---
Ravens, Crows, Jays, and Magpies			
Common raven	*Corvus corax*	---	---
American crow	*Corvus brachyrhynchos*	X	---
Pinyon jay	*Gymnorhinus cyanocephalus*	---	BCC(17)
Blue jay	*Cyanocitta cristata*	---	---
Black-billed magpie	*Pica hudsonia*	---	---
Wrens			
Rock wren	*Salpinctes obsoletus*	---	---
House wren	*Troglodytes aedon*	---	---
Marsh wren	*Cistothorus palustris*	---	---
Shrikes			
Northern shrike	*Lanius excubitor*	---	---
Loggerhead shrike	*Lanius ludovicianus*	X	BCC(17), SGCN, TEPS

POTENTIAL[1] AND DOCUMENTED AVIAN SPECIES LIST (CONTINUED)

Common name[2]	Scientific Name[2]	Recorded within the Upton Plant Site Survey Area[3]	Special Status Designation[4]
Thrushes and Mimic Thrushes			
Northern mockingbird	*Mimus polyglottos*	---	---
Brown thrasher	*Toxostoma rufum*	---	---
Sage thrasher	*Oreoscoptes montanus*	X	BCC(17), IPaC, SGCN
American robin	*Turdus migratorius*	X	---
Mountain bluebird	*Sialia currucoides*	X	---
Starlings			
European starling	*Sturnus vulgaris*	X	---
Waxwings			
Cedar waxwing	*Bombycilla cedrorum*	---	---
Warblers			
Yellow warbler	*Setophaga petechia*	---	---
Yellow-rumped warbler	*Dendroica coronata*	---	---
Common yellowthroat	*Geothlypis trichas*	---	---
Yellow-breasted chat	*Icteria virens*	---	---
Sparrows, Towhees, etc.			
Spotted towhee	*Pipilo maculatus*	X	---
Chipping sparrow	*Spizella passerina*	---	---
Clay-colored sparrow	*Spizella pallida*	---	---
Brewer's sparrow	*Spizella breweri*	X	BCC(17), IPaC, SGCN, TEPS
Field sparrow	*Spizella pusilla*	---	---
Vesper sparrow	*Pooecetes gramineus*	X	---
Lark sparrow	*Chondestes grammacus*	X	---
Sagebrush sparrow	*Artemisiospiza nevadensis*	---	BCC(17), SGCN, TEPS
Savannah sparrow	*Passerculus sandwichensis*	---	---
Grasshopper sparrow	*Ammodramus savannarum*	X	SGCN, TEPS
American tree sparrow	*Spizella arborea*	---	---

POTENTIAL[1] AND DOCUMENTED AVIAN SPECIES LIST (CONTINUED)

Common name[2]	Scientific Name[2]	Recorded within the Upton Plant Site Survey Area[3]	Special Status Designation[4]
Sparrows, Towhees, etc. (Continued)			
Song sparrow	*Melospiza melodia*	---	---
Swamp sparrow	*Melospiza georgiana*	---	---
Lincoln's sparrow	*Melospiza lincolnii*	---	---
White-crowned sparrow	*Zonotrichia leucophrys*	---	---
Baird's sparrow	*Ammodramus bairdii*	---	BCC(17)
Dark-eyed junco	*Junco hyemalis*	---	---
Harris' sparrow	*Zonotrichia querula*	---	---
Chestnut-collared longspur	*Calcarius ornatus*	---	BCC(17), SGCN, TEPS
McCown's longspur	*Calcarius mccownii*	---	BCC(17), SGCN, TEPS
Lapland longspur	*Calcarius lapponicus*	---	---
Lark bunting	*Calamospiza melanocorys*	X	IPaC
Snow bunting	*Plectrophenax nivalis*	---	---
Meadowlarks, Blackbirds, etc.			
Western meadowlark	*Sturnella neglecta*	X	---
Red-winged blackbird	*Agelaius phoeniceus*	X	---
Yellow-headed blackbird	*Xanthocephalus xanthocephalus*	X	---
Common grackle	*Quiscalus quiscula*	X	---
Bullock's oriole	*Icterus bullockii*	---	---
Orchard oriole	*Icterus spurius*	---	---
Rusty blackbird	*Euphagus carolinus*	---	---
Brewer's blackbird	*Euphagus cyanocephalus*	X	---
Brown-headed cowbird	*Molothrus ater*	X	---
Dickcissel	*Spiza americana*	X	BCC(17), SGCN
Bobolink	*Dolichonyx oryzivorus*	---	SGCN

POTENTIAL[1] AND DOCUMENTED AVIAN SPECIES LIST (CONTINUED)

Common name[2]	Scientific Name[2]	Recorded within the Upton Plant Site Survey Area[3]	Special Status Designation[4]
Finches			
American goldfinch	*Spinus tristis*	---	---
House finch	*Haemorhous mexicanus*	---	---
Pine siskin	*Spinus pinus*	---	---
Gray-crowned rosy-finch	*Leucosticte tephrocotis*	---	---
Common redpoll	*Acanthis flammea*	---	---
Old World Sparrows			
House sparrow	*Passer domesticus*	X	---

POTENTIAL[1] AND DOCUMENTED REPTILE AND AMPHIBIAN SPECIES LIST FOR THE UPTON PLANT SITE

Common name[2]	Scientific Name[2]	Recorded within the Upton Plant Site Survey Area[3]	Special Status Designation[4]
Salamanders			
Tiger salamander	*Ambystoma mavortium*	X	---
Frogs and Toads			
Boreal chorus frog	*Pseudacris maculata*	X	---
Northern leopard frog	*Rana pipiens*	---	SGCN, TEPS
Plains spadefoot toad	*Spea bombifrons*	---	SGCN
Great Plains toad	*Anaxyrus cognatus*	---	SGCN
Woodhouse's toad	*Anaxyrus wodhousei*	---	---
Lizards			
Northern sagebrush lizard	*Sceloporus graciosus*	---	---
Greater short-horned lizard	*Phrynosoma hernandesi*	---	---
Turtles			
Western painted turtle	*Chrysemys picta bellii*	---	SGCN
Common snapping turtle	*Chelydra serpentina*	---	---
Snakes			
Eastern yellow-bellied racer	*Coluber constrictor*	---	---
Bullsnake	*Pituophis catenifera*	---	---
Plains hog-nosed snake	*Heterodon nasicus*	---	SGCN
Wandering garter snake	*Thamnophis elegans*	---	---
Prairie rattlesnake	*Crotalus viridis*	---	SGCN

[1] POTENTIAL OCCURRENCE - list derived from range and habitat information in Burt and Grossenheider 1976, Baxter and Stone 1980, Jones et al. 1983, Clark and Stromberg 1987, Peterson 1990, Baxter and Stone 1995, Stokes and Stokes 1996, and Sibley 2000, Lewis 2011, Orabona et al. 2016, and agency species lists referenced below. Species listed include those that may pass through the survey area or vicinity during migration, if the habitats present can support the species.

[2] Common and scientific names taken from Orabona et al. 2016, except when species names have been more recently updated from professional biological organizations.

[3] The Upton Plant Site survey area includes the permit area and a surrounding 2.0-mile perimeter. Documented species within the survey area were recorded from wildlife

surveys conducted specifically for the Upton Plant Site from 2012 through 2015 and in 2018.

[4] SPECIAL STATUS DESIGNATION – BCC(17) = listed as Birds of Conservation Concern (BCC), Bird Conservation Region (BCR) 17 (Badlands and Prairies) (USFWS 2008; https://www.fws.govmigratorybirds/pdf/grants/BirdsofConservationConcern2008.pdf>. IPaC = listed in the Upton Plant Site IPaC v2.3.2. Trust Resource Report (USFWS 2018b; https_ecos.fws.gov_ipac_location_KSBLFA4A7RAIRHEQUQ5WXVAK6I_resources.pdf.). SGCN = listed as Species of Greatest Conservation Need by WGFD (2017), which 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. T&E = species listed or included in the listing process by USFWS as Threatened or Endangered in Weston County, Wyoming under the Endangered Species Act (ESA). TEPS = USFS R2 Sensitive Species (2017) that do or may occur in the Thunder Basin National Grasslands and are considered for conservation measures aimed to avoid trends toward an ESA listing.

ATTACHMENT F9-B.9-2

2018/2019 WINTER GREATER SAGE-GROUSE SURVEY RESULTS FOR RARE ELEMENT RESOURCES, INC.'S 2018 WILDLIFE BASELINE UPDATE FOR THE BEAR LODGE PROJECT-UPTON PLANT SITE

PRECISION WILDLIFE RESOURCES, LLC
Solutions designed to precisely match your project needs

December 31, 2018

Mr. Randy Scott
President and CEO
Rare Element Resources, Inc.
P.O. Box 271049
Littleton, Colorado 80127

RE: 2018/2019 Winter Greater Sage-grouse Survey Results for Rare Element Resources, Inc.'s 2018 Wildlife Baseline Update for the Bear Lodge Project – Upton Plant Site

Dear Mr. Scott,

Precision Wildlife Resources, LLC (PWR) was contracted by Rare Element Resources, Inc. (RER) in April 2018 to supplement the original 2012 and 2013 wildlife baseline investigations and update the Wildlife Baseline Report for the Bear Lodge Project, Upton Plant Site. Nearly all 2018 wildlife surveys results for the Upton Plant Site were detailed in Addendum D9-B, which was written in November 2018 for submittal to the Wyoming Department of Environmental Quality. However, due to the report timing, the winter sage-grouse (*Centrocercus urophasianus*) surveys could not be completed and the results included in Addendum D9-B at that time. This letter is being provided, as indicated in Addendum D9-B, to detail the final 2018 wildlife survey effort (winter sage-grouse surveys) for the Bear Lodge Project, Upton Plant Site.

Methods

In late 2018, sage-grouse winter use surveys for the Bear Lodge Project, Upton Plant Site were conducted on two occasions in or within the 2.0-mile of the Upton Plant Site permit area (see the "Wildlife Survey Area" delineation on Figure D9-B.8-1 in Addendum D9-B). Surveys were completed on December 5 and December 28 using a combination of vehicular and pedestrian searches throughout sagebrush habitats. Surveys were timed to coincide with periods of substantial snow cover and colder temperatures in the winter months. On each survey, biologists investigated areas of tall, dense sagebrush in windswept places with less snow cover to look for grouse and/or their sign (tracks in the snow, droppings, feathers). As indicated in Addendum D9-B, suitable seasonal sage-grouse habitats (including nesting, brood-rearing, and wintering) are relatively abundant in the western portions of the wildlife survey area. All upland game bird sign or observations were recorded, including (when possible) the species, number of individuals, location, habitat, and activity. All sightings of non-targeted animals throughout the Upton Plant Site wildlife survey area were also recorded and maintained in the overall documented wildlife species list for the project.

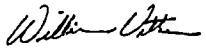
Results

Winter survey conditions on both survey dates were ranked as good to excellent. On December 5, abundant fresh snow, approximately 6 to 8 inches deep, was present throughout the region. Temperatures ranged from 7° to 19° Fahrenheit, with calm to light winds (0 to 5 miles per hour [mph]) and minimal cloud cover (approximately 10%). Fresh snow, drifted approximately 4 to 12 inches deep, was again present throughout the region on December 28. Temperatures that day ranged from 12° to 20° Fahrenheit, with mild winds (10 mph) and overcast (100%) cloud cover. Despite optimal winter survey conditions and the abundance of suitable winter sage-grouse habitats in portions of the wildlife survey area, no sage-grouse or their sign (e.g., tracks) were observed during winter use surveys conducted at the Upton Plant Site during winter 2018/2019.

Likewise, no wildlife species of management concern (Federal or State) or additional wildlife species previously undocumented within the Upton Plant Site survey area were recorded during the winter surveys.

For complete submittal of the updated wildlife information to Wyoming Department of Environmental Quality, I recommend that this letter be appended to Addendum D9-B as Attachment D9-B.9-2. If you have any questions or concerns, please feel free to contact me at (307) 670-1145 or wm_vetter@msn.com.

Sincerely,



William Vetter
Principal Wildlife Biologist

PWR, LLC ♦ 2449 West Beaver Drive Gillette, Wyoming 82718 ♦ (307)-670-1145 ♦ wm_vetter@msn.com